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THE SETTLEMENT of the anthracite miners strike through the efforts of President Roosevelt has been secured, the details being fully given on another page.

The Board of Arbitrators appointed by President Roosevelt to take up all the issues in controversy between the striking anthracite miners and their employers is not likely to be altogether satisfactory to the latter, though organized labor will certainly get a fair show from it. We have no wish to criticise the President, since his choice is doubtless as good a one as would be made by any man in his position in the middle of all the political wire-pulling that has been the feature of this strike for several weeks. It is our belief, however, that the board will act fearlessly, showing favor neither to operators nor to the United Mine Workers. Issues far greater than the rate to be paid for mining a particular coal seam are involved—issues that are of national importance, and are bound to call for legislation within a few years. The whole question of the rights of labor organizations, their duties and responsibilities, have been involved in the present strike, and we believe that the board by acting fearlessly, and insisting that its report be not edited to suit political exigencies, can do a permanent service to the nation—a service that will ensure its members lasting fame.

F. HOBART.

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IRON ORE shipmnts from the Lake Superior region passing through the Sault Ste. Marie Canal, for the season up to October 1, reached a total of 18,536,170 tons, which is an increase of 4,952,303 tons, or 36.4 per cent, over the corresponding date in 1901. This does not include the shipments made through Escanaba, which were last year about 20 per cent of the total. Assuming the proportion to have been the same this year, would give total shipments of about 23,170,000 net tons to October 1. Unless there should be an unusual falling off in the closing month of the navigation season, this indicates a total for the year far beyond all precedent.

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THE FULL decision of the New Jersey Court of Errors and Appeals in the case of the issue of bonds by the United States Steel Corporation has been made public. It shows that nine out of the twelve judges of the court concurred in the decision. The opinion, written by Justice Van Sickel, upholds absolutely the legal right of the company to issue bonds for retirement of preferred shares; and to retire, with the proceeds of such bond issue, as many shares as it can obtain on the basis of their offer to the shareholders. Refusal of some shareholders to give up their shares does not, in the court's opinion, invalidate the general operation. To the extent that holders of the stock shall consent to such surrender of their shares, the company's purpose may be carried out.

It is noticeable that the higher court takes an entirely different view of the transaction from that expressed by the Court of Chancery. The latter regarded it entirely as a distribution of bonds to certain of the preferred stockholders in exchange for their stock; while the Court of Appeals looks upon it as a loan contracted by the corporation, the proceeds of which are to be used to buy up or retire stock. The difference in the theories is a fine point in law, but it seems to have been sufficient to determine the action of the judges.

THE INDUSTRIES AT SAULT STE. MARIE.

The report of the Consolidated Lake Superior Company, which we summarized in our issue of October 4, marks the progress as an industrial success of one of the greatest undertakings that has ever been ventured upon on this continent. We do not mean to institute comparisons between it and the construction of some of our great railroad lines, or the harnessing of Niagara Falls, or many other great industrial feats which have been accomplished by American brains and hands, but in the development of virgin resources to a wide range of marketable products on a well co-ordinated scheme and in a comparatively brief time it has presented, we believe, something unique in industrial history. Great manufacturing enterprises generally start from a small beginning and attain their magnitude through a long period of development; seldom do they spring, Minerva-like, fully equipped into the field. The inception and consummation of such a scheme as was laid out at Sault Ste. Marie required imagination, clear perception, broad knowledge and indefatigable energy. These qualities were possessed by Mr. F. H. Clergue, who had moreover the ability of promotion, magnetism, or whatever it may be called, to impress upon men with money the scope of his ideas and incite in them an equal enthusiasm. And no less creditable is the nerve of his backers, chiefly Philadelphia men, who stood faithfully by the scheme during the long period of its development.

It was in 1894 that Mr. Clergue and his associates purchased the water power at Sault Ste. Marie, with the view of retailing it, so to speak. Customers proving to be few, however, the idea was conceived of creating them. The company itself started manufacturing enterpirses, carefully studying the natural resources of the region. First a wood pulp grinding mill was erected to utilize the abundant spruce forests of the vicinity. Then a sulphite pulp mill was planned. This required sulphurous acid, so a nickel and copper mine was bought. Utilization of the residuum of the ore was the natural sequence; the cupriferous was smelted into matte and for the noncupriferous a process of smelting for ferro-nickel was developed. Pig iron was then needed, so an iron mine was acquired. This involved the manufacture of charcoal, which was entered upon in the most modern way, so as to recover the by-products—wood alcohol, acetate of lime, etc. A steel plant and railmill followed. All this has been done by subsidiary companies. The leading idea has been to waste nothing and to make on the spot everything that can be made economically. The advantages of the geographical situation of Sault Ste. Marie, the excellent transportation facilities, the great natural resources of the region and the system of exploitation by the various sub-companies, with their community of interest, combine into great possibilities under an enterprising and far-seeing management.

A large manufacturing town, equipped with a street railroad, hotels, shops, foundries and all the accessories of civilization and of industry has been developed. Mines and quarries have been opened. Huge and costly canals for power and for traffic have been excavated. Saw mills have been established in the forests. A railroad, which is designed to go to Hudson Bay, has been run northward to fetch down the iron ore and timber; passing through an unsettled country, but already with a large traffic and yielding a handsome revenue. These are only some of the big things that have been done at Sault

Ste. Marie. More may be expected. The company has expended there a vast amount of money, and it is gratifying to know that its commercial enterprise and patience are now beginning to reap their proper reward.

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SOME GERMAN INDUSTRIAL CONDITIONS.

In the Boston *Transcript* of October 1, Mr. C. B. Firestone, who has been contributing an interesting series of articles on the commercial outlook in Germany, refers to some of the industrial conditions affecting competition with the United States and calls attention to certain points in words that are worth repetition. He mentioned the apparent prejudice which exists in Germany against foreign goods because they are foreign, the resistance to the introduction of foreign machines in competition with their own and the facility with which they seize upon a new idea that is good and imitate it. An American who had been introducing a certain line of machinery told Mr. Firestone of the apparently combined opposition he had encountered. There is a law in Germany which requires the promoter of any article to abstain from injurious comment on a rival article unless it can be proved to be true. Mr. Firestone's informant was constantly hearing of injurious things said about his machinery, but never could trace them to their source; on the other hand, he never made a severely critical remark about a German machine without receiving promptly from the counsel of the manufacturer a warning to desist talking or demand for a retraction under threat of suit at law.

When a thing has proved its merit the German admits it and copies it. His mind is open to new ideas. He is the greatest imitator in the world, unless it be the Japanese. Both nations send their experts to other countries in search of ideas and methods, and with both it is remarked that the moment a good trade is started it stops. Only the possession of some inimitable advantage in the shape of raw material or otherwise will preserve it. On the other hand, the Germans are closing, or have already closed, the channels of information as to their own industrial specialties.

The German has entered the field of production without any hampering prejudices. If a buyer wants an article at a particular price, or of a particular pattern, he makes it for him, no matter if there be no further call for it. He may make "cheap and nasty" goods, as his rivals assert, but he caters to the demand as he finds it, and if there be no demand sometimes he creates it. He travels extensively in foreign countries, adapts himself to their conditions, learns their languages and finds out what they need, or what opening there may be, and then supplies it.

Industrial combinations are recognized in Germany as a modern and natural development of commercial conditions and there is little or no distrust of them. As Brentano says, they are regarded as "providing a parachute for the victims of overproduction to get safely down to a solid basis." By a judicial decision of 1898 the Empire, as Dr. Halle puts it, "officially recognized the economic justification of combinations."

The German manufacturer has an advantage over the American in the cheapness and comparative docility of his labor. The German laborer is a careful craftsman, with a superior technical education. He does well what he is told to do and in some lines he is as familiar with automatic machinery as the American is. His training in the Army, instead of unfitting him for mechanical pursuits, gives him certain qualifications for them. An American superintendent in a great German factory told Mr. Firestone that he would never employ a man who had not been in the army. "An ex-soldier," he said, "has learned to hold his tongue, to do what is told him, and to take discipline sensibly." The German workman is more frugal than the American and no less temperate. On the other hand, the more highly paid American workman has been made through the stimulus of mental processes to produce more. He is able to meet new conditions and is not at a loss when out of the groove, if a sudden situation calls for the exercise of initiative. His technical education is not so complete as in the case of the German, but that is compensated for by his wider field of interest and observation. He is an omnivorous reader of the newspapers, which the German is not, and it has been argued that the press is a greater power in the equipment of the American workman than is the technical training in the German's.

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MARKET CONDITIONS.

Iron and Steel.—The iron and steel markets show little change, except that a certain hesitation is manifest, which is largely due to the excitement over the coal situation. For the moment no new business is in sight, and orders are being held back until the question of coal supply shows signs of a satisfactory settlement. This does not mean any slackening in work at the mills, the full capacity of which is occupied by existing contracts. The blast furnaces are still disturbed by slow deliveries of coke. Meantime a good deal of foreign material is coming in, and more is contracted for.

Copper—The copper situation shows little change. Consumers are inclined to hold back until the uncertainty about coal is over. For the most part they are buying only for immediate requirements, and will continue to do so, in all probability, as long as present conditions last. Some manufacturers, in fact, have been forced to close down in part by scarcity or very high price of coal. It is reported that one large concern is making arrangements to use crude oil as fuel.

The report of Mr. John Stanton, who acts as statistician for the producing companies, shows that in September the output was well maintained, notwithstanding the temporary closing of one or two large mines. The total United States production for the month was 25,788 long tons of fine copper, which was 492 tons more than in August, and 4,208 tons, or 19.5 per cent, more than in September, 1901. For the nine months ending September 30 the total reported is 218,281 tons, showing an increase of 18,655 tons, or 9.3 per cent, over the corresponding period last year. The production of the foreign reporting mines—including all the important European mines—was 9,155 tons in September and 80,415 tons for the nine months, showing a decrease of 322 tons for the month, but a gain of 6,657 tons, or 9 per cent, for the year. Exports from the United States continue on an extraordinary scale. In September they were 13,183 tons, or more than twice those of September, 1901. For the nine months the total was 135,311 tons—62 per cent of the production—showing an increase of 67,311 tons, or 98.8 per cent, over last year.

Other Metals.—Tin continues dull, with some improvement in demand, however.

Lead remains unchanged as to price, with about the usual volume of business. No further details can be given about the combination of manufacturers.

Spelter is comparatively quiet, though prices remain strong and much business is still being done. The situation, however, reflects the general uncertainty.

Silver remains dull and depressed, with no signs of any change in the near future.

Coal.—Conditions in the Western coal markets continue very unsatisfactory. The dependence upon transportation conditions is still general, and the railroads seem to be as badly tied up as at any time since the early summer. The Lake trade is suffering to a special extent, as not more than a month of the navigation season remains, and the quantity of coal sent forward is still far short of the winter's supply. There is now no doubt that a large quantity of coal will have to be carried to the Northwest by rail this winter at a cost to consumers equal to the higher freight charges. Apart from the Lake trade, Chicago, Cleveland and other large cities are having difficulty in getting their supplies. The railroads claim that they are making all possible efforts to supply cars and motive power, but they are still far short of what is needed. The strike of the Alabama miners still continues.

The seaboard bituminous coal market has quieted down very much, in view of the possibility of an early settlement of the anthracite strike. Buying outside of the regular trade has fallen off, and prices quoted are approaching those prevailing before the excitement over coal supplies began.

The anthracite situation is treated in another column.

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THE AMORTIZATION OF MINING STOCKS.

That there is a substantial difference between mining and other investments must be generally admitted; and in this case we refer to legitimate mining enterprises, not to wild-cats or "fake" schemes, nor even to purely speculative ventures, which occasionally have a legitimate basis. The difference is that investments in land, buildings, manufacturing establishments and the like are usually continuing investments. The property of a railroad company, for instance, if due attention is paid to renewals and improvements, may be expected to make returns for an indefinite period; for the contingency that the railroad may be superseded by some other method of transportation, is too remote for the ordinary investor to take into account. It is the same with the other forms of investment referred to, and with still others which might be mentioned.

A mining investment, on the other hand, is not a continuing, but rather a time or term investment. The best mines have, and always will have, only a certain period of existence, which may be shorter or longer according to conditions, but will end in the exhaustion of the mineral deposit. To this rule there may be an exception, like the Rio Tinto, which has been worked over two thousand years and still pays; but such cases are too few to be taken into account, or to affect the general rule.

For the reasons stated, it is generally accepted that a mining investment should return, in addition to interest upon the money, a sufficient amount to repay the original capital during the life of the mine, whatever that may prove to be. That is, the profits—to be satisfactory—should include a sinking fund which at the close of a certain term would equal the capital stock. We say that this is generally accepted, but this is true only in theory, for in practice it is usually neglected, in this country at least.

The common American rule has been to pay out in dividends as much as possible, leaving the individual stockholder to make such disposition of the earnings as he sees fit. An exception is to be found in the case of some coal mining companies, which set aside a fixed amount for each ton of coal mined; but in most of these cases the fund so created is intended to meet bonds or other fixed obligations.

The creation of a fund to replace the capital stock is a much more frequent practice in Europe than it is in this country. In Germany and France it is very

common, though English companies have adopted it to some extent. In France it is so general that we have to turn to the French for the word which best expresses it, and which we have used in the title to this article. The amortization fund is a regular charge upon the earnings of most French mining companies, and is taken as a matter of course, and as a necessary part of the expenses.

The disposition of such a fund when the life of a mining property ends is, of course, a matter to be determined by the owners. It may be divided among the stockholders, or it may be used to purchase other property and continue the existence of the company; or, without waiting for the exhaustion of the original mine, it may be applied from time to time for the purchase of new property and the extension of the company's operations. Each course may have reasons in its favor in different cases; but probably the last given is the more usual one on the Continent of Europe. In England the second one seems to be preferred, and it has given rise to some curious changes; as, for instance, when we find a company which at one time operated a mine in Idaho, and which has an Idaho name, now working a mine in Western Australia.

The establishment of amortization funds will not become general among mining companies in this country for some time to come, we believe. It is too much the custom to leave such matters to the individual stockholder; and he, in the great majority of cases, looks forward to selling his stock, if he can, at an advance rather than to retaining it as an investment. Under such circumstances he wants the largest possible present return, not a provision for the future. This disposition is not favorable to the development of legitimate mining; indeed the condition of the few important mining companies which have a generally permanent body of stockholders is quite sufficient to prove the advantages of such an ownership, and the evils of the opposite condition.

We believe, however, that this question of amortization deserves more consideration than it usually receives. Some study of foreign practice and some comparison with our own will be of advantage to managers and stockholders of mining companies.

ORE IN SIGHT.

The Institution of Mining and Metallurgy, of London, has issued a timely protest against the continual misuse of the term "Ore in Sight." Among leading members of the profession there is a wide divergence of opinion as to the exact application of the words. Some hold that the term should only be used in describing ore that is surveyed and sampled, while others claim that it may be legitimately used in estimating the probable contents of the vein between any two proved points. Epigrammatically it may be said that it may mean ore visible either to the physical eye or the mind's eye. Once it is admitted that the term may include a guess at probabilities, the question of the individual equation comes in, and it is impossible to reduce this to a rule or formula. The Institution has rightly decided to recommend the members whenever reporting on a mine to specify exactly what they mean by the word and to describe, with the aid of diagrams, how they arrive at their estimates both of ore blocked out and of ore that may be reasonably assumed to exist.

Another recommendation of the Institution is that the words "ore in sight" shall not be used to denote anything that is not payable. The wording of the recommendation is: "That in making use of the term ore in sight an engineer should demonstrate that the ore so denominated is capable of being profitably extracted under the conditions obtaining in the district." For ourselves we do not agree with this narrowing down of the use of the word "ore" to mean only payable mineral. If it includes only payable material, there is no word to use for material that is not quite payable or not payable under accidental local conditions. We prefer to include as ores all minerals bearing metals or metallic compounds in sufficient quantities to make them worth prospecting or experimenting on, instead of drawing the line at payability. We should therefore have written the Institution's recommendation as follows: "That an engineer in describing and estimating ore in sight should classify the ore into different grades and give his opinion as to how far the different grades can be worked at a profit under existing conditions."

The recommendations of the Institution are bound to raise considerable interest and discussion, so we give them in full herewith:

"The Council of the Institution of Mining and Metallurgy recognizing the great importance, to the Mining Industry and to the public generally, of the subject dealt with in the paper on Ore in Sight, by Mr. J. D. Kendall (*Transactions*, Volume X), appointed a committee to consider what steps the Institution might usefully take in defining the term 'Ore in Sight.' The views expressed by leading members of the profession showed a great divergence of opinion as to the definition of the term. After due consideration and discussion the Council came to the following decision:

"1. That members of the Institution should not make use of the term 'Ore in Sight,' in their reports, without indicating, in the most explicit manner, the data upon which the estimate is based; and that it is most desirable that estimates should be illustrated by drawings.

"2. That as the term 'Ore in Sight' is frequently used to indicate two separate factors in an estimate, namely: (*a*) Ore Blocked Out—that is ore exposed on at least three sides within reasonable distance of each other—and (*b*) Ore which may be reasonably assumed to exist though not actually blocked out on, these two factors should in all cases be kept distinct, as (*a*) is governed by fixed rules, while (*b*) is dependent upon individual judgment and local experience.

"3. That in making use of the term 'Ore in Sight' an engineer should demonstrate that the ore so denominated is capable of being profitably extracted under the working conditions obtaining in the district.

"4. That the members of the Institution be urged to protect the best interests of the profession by using their influence in every way possible to prevent and discourage the use of the term 'Ore in Sight' except as defined above; and the Council also strongly advise that no ambiguity or mystery in this connection should be tolerated, as they (the Council) consider that such ambiguity is an indication of dishonesty or incompetency."

There are several other reforms which we hope the Institution will take up as opportunity offers. One is the confusion of tons in England and the colonies. In some cases the legal ton of 2,240 pounds is used, but more ofter the miners' ton of 2,000 pounds, while the metric ton is used only in isolated cases. On the other hand the ton used by smelters and other buyers of ores varies with each district, in old-fashioned places being practically 2,400 pounds. Then it is difficult to tell what is meant by a ton of metal output such as copper, lead, etc. The Institution might with advantage, instruct the members to adhere invariably to the ton of 2,000 pounds and later on no doubt they will be able to influence the smelters and metal merchants to adopt a uniform system. At least this will last until it is superseded —as we hope it will be in time—by the general adoption of the metric system.

Then there is the confusion caused by the loose use of the word "ounce," when referring to gold. In English countries it is quite usual for ounces of gold to mean ounces of bullion, and the cause for the practice can hardly be anything but to make the returns look larger than they really are. The Institution might recommend members to confine the use of the word to ounces of fine gold. Probably some English engineers would prefer standard gold (.925 fine) to fine gold, but as the latter is in general use among American mining men its adoption is to be recommended in other parts of the world.

As our readers are aware, we have always been to the fore in advocating exactness in all expressions, terms and formulas, but perhaps the Institution will have a greater chance of securing these ends, as the members are animated with an esprit de corps and a desire to raise the level of the profession.

SETTLEMENT OF THE ANTHRACITE MINERS' STRIKE.

A definite step towards the possible settlement of the anthracite coal miners' strike was taken on October 13, when a number of representatives of the operators submitted to President Roosevelt a proposition for the arbitration or settlement of the questions at issue between them and the miners.

The proposition, as submitted by the operators and made public, is signed by presidents George F. Baer, of the Philadelphia & Reading, the Lehigh & Wilkes-Barre and the Temple Iron Company; E. B. Thomas, of the Erie, and the Pennsylvania Coal Company; W. H. Truesdale, of the Delaware, Lackawanna & Western; T. P. Fowler, of the companies controlled by the New York, Ontario & Western; R. M. Olyphant, of the Delaware & Hudson; and Alfred Walters, of the Lehigh Valley. It is addressed "To the Public" and is, in full, as follows:

"The managers of the different coal properties comprising the anthracite coal-fields, wish their position in the present strike to be understood, and therefore make the following statement of fact:

"There are in the anthracite regions about 75 operating companies and firms, and 147,000 miners and workmen, (of whom 30,000 are under age), comprising some 20 nationalities and dialects.

"Of these workmen, possibly one-half belong to the United Mine Workers Union, of which Mr. John Mitchell is president. That organization was originally formed in the bituminous coal regions, and three-fourths of its members are miners of bituminous coal, and bituminous coal is sold in competition with anthracite coal. The remaining workmen in the anthracite fields either belong to no unions whatever or do not belong to the Miners' Union.

"The present strike was declared by the Mine Workers' Union on the 10th day of May, 1902. Since that time many workmen not belonging to or not willing to follow that organization were working in and about the mines.

"From 17,000 to 20,000 are now at work. Many more have wished to work, but have been prevented by a course of violence and intimidation toward those working and toward their families, accompanied by the destruction of properties and the fear of death or bodily harm to every man who wishes to exercise his right to work.

"A schedule is being prepared and will be annexed hereto showing some of the things done to create this reign of terror, and every instance stated can be verified by reference to the officers of the law—civil and military—in the anthracite regions. This violence has continued and steadily increased, notwithstanding repeated disavowals by Mr. Mitchell, and it is clear that he either cannot or will not prevent it, and that the rights of the other workmen cannot be protected under the supremacy of the Mine Workers' Union.

"The coal companies believe that the wages paid in the coal regions are fair and full, and all that the business in its normal condition has been able to stand if the capital invested is to have reasonable return. The profits have been small, several of the companies have become bankrupt and been reorganized several times. Several have never paid dividends, and the dividends of the others have been a small return for the capital invested.

"It is not, however, the purpose of this statement to discuss this question. The undersigned are not, and never have been, unwilling to submit all questions between them and their workmen to any fair tribunal for decision. They are not willing to enter into arbitration with the Mine Workers' Union, an organization chiefly composed of men in a rival and competitive interest, and they are not willing to make any ar-

rangement which will not secure to men now working and all now or hereafter wishing to work, whether they belong to the Mine Workers' Union or not, the right and opportunity to work in safety and without personal insult or bodily harm to themselves or their families. For these reasons the arbitrations heretofore proposed have been declined.

"It will be remembered that at the conference in Washington, Oct. 3, we made the following offer:

"That we would take up at each colliery any alleged grievance and consider it fairly and adjust it if it proved to be a grievance, and in the event of a failure to make a satisfactory adjustment the questions at issue to be submitted to the final decision of the Judge of the Court of Common Please of the district in which the colliery is located.

"This offer was made by us in good faith, and we desire here to reaffirm it.

"The coal companies realize that the urgent public need for coal and the apprehension of inadequate supply the approaching winter call for an earnest effort to reach a practical conclusion which will result in an increased supply, and the presidents of the of the companies desire to make every effort to that end, and which does not involve the abandonment of the interest committed to their care and of the men who are working and seeking to work in their mines. This responsibility they must bear and meet as best they can.

"They therefore restate their position:

"That they are not discriminating against the United Mine Workers, but they insist that the Miners' Union shall not discriminate against or refuse to work with non-union men; that there shall be no restriction or deterioration in quantity or quality of work, and that owing to the varying physical conditions of the anthracite mines, each colliery is a problem by itself.

"We suggest a commission be appointed by the President of the United States (if he is willing to perform that public service), to whom shall be referred all questions at issue between the respective companies and their own employees, whether they belong to a union or not, and the decision of that commission shall be accepted by us.

"The commission to be constituted as follows:

"1. An officer in the Engineer Corps of either the military or naval service of the United States.

"2. An expert mining engineer, experienced in the mining of coal and other minerals, and not in any way connected with coal-mining properties, either anthracite or bituminous.

"3. One of the Judges of the United States Courts of the Eastern District of Pennsylvania.

"4. A man of prominence, eminent as a sociologist.

"5. A man, who by active participation in mining and selling coal, is familiar with the physical and commercial features of the business.

"It being the understanding that immediately upon the constitution of such commission, in order that idleness and non-production may cease instantly, the miners will return to work and cease all interference with and persecution of any non-union men who are working or shall hereafter work. The findings of this commission shall fix the date when the same shall be effective and shall govern the conditions of employment between the respective companies and their own employees for a term of at least three years."

A note appended to the statement reads:

"The schedule referred to in this statement was not brought from New York, as it had not been completed."

The submission of this plan to the President was unexpected, but is understood to have been the result of strong pressure from various quarters which was brought to bear upon the controlling interests in the anthracite companies. Following its publication, on Wednesday, President Mitchell, of the miners' union, had a conference with President Roosevelt, at which it is understood that no definite acceptance, or promise of acceptance, was made, and that some modifications in the plan were suggested. Mr. Mitchell is said to have pleaded the necessity of conferring with other officers of the Union, also.

The conclusion of the conference was reached about midnight on Tuesday, when the representatives of the operators agreed to certain modifications of their proposition suggested by Mr. Mitchell. The President will urge the immediate resumption of mining, and operations will, it is expected, begin next week.

The following official statement announcing the close of the strike was issued at the White House at 2:20 a. m. on Thursday:

"After a conference with Mr. Mitchell and some further conference with representatives of the coal operators, the President has appointed the members of the commission to inquire into, consider, and pass upon all questions at issue between the operators and miners in the anthracite coal fields.

"Brig.-Gen. John M. Wilson, United States Army, retired (late Chief of Engineers, United States Army), Washington, D. C., as an officer of the Engineer Corps of either the military or naval service of the United States.

"Mr. E. W. Parker, Washington, D. C., as an expert mining engineer. Mr. Parker is chief statistician of the coal division of the United States Geological Survey and the managing editor of the Engineering and Mining Journal of New York.

"Hon. George Gray, Wilmington, Del., as a Judge of a United States Court.

"Mr. E. E. Clark, Cedar Rapids, Iowa, Grand Chief of the Order of Railway Conductors, as a sociologist, the President assuming that for the purpose of such a commission the term sociologist means a man who has thought and studied deeply on social questions and has practically applied his knowledge.

"Mr. Thomas H. Watkins, Scranton, Penn., as a man practically acquainted with the mining and selling of coal.

"Bishop John L. Spalding, of Peoria, Ill. The President has added Bishop Spalding's name to the commission.

"The Hon. Carroll D. Wright has been appointed recorder of the commission."

The operators' proposition was for a commission of five, but the miners insisted on the enlargement of the commission. They are reported to have suggested seven, but if so Mr. Mitchell's objections have been so far overcome that he now consents to six.

Brig.-Gen. John M. Wilson, Chief of Engineers, U. S. A., has a fine record as an engineer and an officer, and was for a time superintendent of the United States Military Academy.

Edward Wheeler Parker, statistician of the United States Geological Survey, is widely known as the author of the annual reports of coal and coke production in the United States in the statistical volumes of the Survey, and for the past year has been managing editor of the Engineering and Mining Journal.

The Right Rev. John Lancaster Spalding, Bishop of Peoria, is a distinguished prelate of the Roman Catholic Church, who is, perhaps, best known for his efforts towards the arbitration of disputes between employers and employees and for his writings on labor topics.

George Gray, member of a prominent Delaware family, has a long and honorable record as a member of the bar, and since 1899 has been Judge of the Circuit Court, Third United States Circuit. He was Senator from Delaware from 1885 to 1889, and a member of the Paris Peace Commission in 1898.

E. E. Clark, of Cedar Rapids, Iowa, who represents directly organized labor on the Board of Arbitration, is Grand Chief of the Order of Railway Conductors.

Thomas H. Watkins was a member of the firm of Simpson & Watkins, of Scranton, Pa., which was one of the largest of the independent anthracite operators in the upper Wyoming Valley and about Scranton. He is also interested in coal mining projects in Mexico. He is thoroughly acquainted with the anthracite region.

Carroll Davidson Wright, recorder of the board, is well known through his work as Chief of the Bureau of Statistics of Labor in Massachusetts from 1873 to 1888, and through his writings since he became Commissioner of Labor at Washington in 1885. He is the author of many works on labor questions.

THE NEW HAVEN MEETING OF THE AMERICAN INSTITUTE OF MINING ENGINEERS.

The eighty-third meeting of the Institute began in New Haven, Conn., on Tuesday, October 14. The arrangements for this meeting are in charge of a local committee, composed of the following gentlemen: R. H. Chittenden, Director of the Sheffield Scientific School, Chairman; L. V. Pirsson, Professor of Physical Geology, Secretary; W. H. Brewer, Professor of Agriculture; C. E. Beecher, Professor of Paleontology; F. L. Bigelow, President of the Bigelow Boiler Works; Theodore A. Blake; Wm. P. Blake, Director of the Mining School, University of Arizona; G. J. Brush, Professor of Mineralogy, Emeritus; A. J. DuBois, Professor of Civil Engineering; H. W. Farnam, Professor of Political Economy; H. E. Gregory, Assistant Professor of Physiography; J. H. Hammond, Professor of Mining Engineering; C. S. Hastings, Professor of Physics; S. L. Penfield, Professor of Mineralogy; J. K. Punderford, Secretary of the Fair Haven & Westville Electric Railway Company; C. B. Richards, Professor of Mechanical Engineering; H. B. Sargent, Vice-President of Sargent & Company; M. F. Tyler, Treasurer of Yale University; H. L. Wells, Professor of Analytical Chemistry and Metallurgy; Eli Whitney, President of the New Haven Water Company; H. S. Williams, Professor of Geology.

The headquarters of the Institute were at the New Haven Hotel. The regular sessions of the Institute were held in North Sheffield Hall, Sheffield Scientific School of Yale University.

The programme as arranged by the local committee is given below:

Tuesday, October 14.—Opening Session at 8 p. m. Address of welcome by President Hadley of Yale University, and response by E. E. Olcott, President of the Institute. Biographical notice of Clarence King, by R. W. Raymond, S. F. Emmons, James T. Gardiner, and James D. Hague.

Wednesday, October 15.—Morning session at 10 o'clock. The development of By-Product Coke Ovens in the United States, by Christopher G. Atwater, New York City. The afternoon afforded an opportunity to visit some of the university buildings, as well as other points of interest, and to attend the Yale-Vermont football game at the Yale Athletic Field. Evening session at 8 o'clock. The Blake Crusher and Its Application in Various Industries, by William P. Blake, Tucson, Ariz.

Thursday, October 16.—Morning session at 10 o'clock. At the close of this session Professor H. E. Gregory gave an illustrated lecture on the Geology of the New Haven Region. Afternoon—Geological excursion to West Rock and many points of geologic, scenic and historical interest. The members took special trolley cars near the New Haven House at 2:30 o'clock and proceeded to Westville. The ascent of the Rock was made on foot. Evening, at 8 o'clock—Reception of the Yale Art School to the members and friends of the institute, by the local committee.

Friday, October 17.—Morning session at 10 o'clock. Afternoon—Visits to the university buildings and the Peabody Museum. Prof. S. L. Penfield pointed out objects of special interest in the Mineralogical Department, comprising the Yale University collection and the Brush collection, and Prof. C. E. Beecher described the exhibition of dinosaurs and other extinct forms of life.

The list of papers presented at this meeting is as follows:

1. Biographical Notice of Clarence King, by R. W. Raymond, S. F. Emmons, James T. Gardiner and James D. Hague.

2. The Development of By-Product Coke Ovens in the United States, by Christopher G. Atwater, New York City.

3. The Blake Crusher and Its Applications in Various Industries, by W. P. Blake, Tucson, Ariz.
4. The Lodes of Cripple Creek, Colo., by T. A. Rickard, Denver, Colo.
5. The Veins of Boulder and Kalgoorlie, by T. A. Rickard, Denver, Colo.
6. Preliminary Notes on Vein Enrichment by Ascending Hot Waters, by Walter Harvey Weed, Washington, D. C.
7. Ore Deposits Near Igneous Contacts, by Walter Harvey Weed, Washington, D. C.
8. What Is a Mining District? by R. W. Raymond, New York City.
9. The Valuation of Mines of Definite Average Income, by H. D. Hoskold, Buenos Aires, S. A.
10. The Geology of Southwest Texas, by E. T. Dumble, Houston, Texas.
11. Notes on the Treatment of Zinc Precipitate Obtained in Cyaniding New Zealand Ores, by Hamilton Wingate, Bristol, England.
12. The Direct Cyaniding of Wet-Crushed Ores in New Zealand, by Hamilton Wingate, Bristol, England.
13. The Copper Deposits of Sierra Oscura, N. M., by H. W. Turner, San Francisco, Cal.
14. Amarillium, by Wm. M. Courtis, Detroit, Mich.
15. The Manganese Industry of the Department of Panama, Republic of Colombia, by E. G. Williams, Colon, S. A.
16. An "All-Fire" Method for the Assay of Gold and Silver in Blister Copper, by Walter G. Perkins, Grand Forks, B. C.
17. Coking in Beehive Ovens, with Reference to Yield, by Charles Catlett, Staunton, Va.
18. Elimination of Arsenic, Antimony and Bismuth from Copper, by Allan Gibb, Mount Perry, Australia.
19. The Chemistry of Ore Deposition, by Walter P. Jenney, Salt Lake City, Utah.
20. The Measurement of High Furnace Temperatures, by Leonard Waldo, New York City.

The list of members and guests registered at this meeting is as follows:

E. E. Olcott, president, New York.
Dr. R. W. Raymond, secretary, New York.
Leslie McCreath, Harrisburg, Pa.
Henderson Gilbert, Harrisburg, Pa.
Robert G. Leckie, Sudbury, Ont.
I. N. Knapp, Philadelphia, Pa.
J. C. Roberts, Niagara Falls, N. Y.
Mrs. J. C. Roberts, Niagara Falls, N. Y.
E. W. Parker, New York.
H. L. Wells, New Haven, Conn.
Olof Wenstrom, Boston, Mass.
Mrs. Olof Wenstrom, Boston, Mass.
Miss Holmes, Newton, Mass.
E. Gybbon Spilsbury and Miss Spilsbury, New York.
Bradley Stoughton, New York.
W. T. DeCamp and Mrs. DeCamp, New York.
C. O. Ripley, Newark, N. J.
J. H. Lee and Mrs. Lee, Baltimore, Md.
Mr. Hungerford and Mrs. Hungerford, Jersey City.
W. H. Fluker, Tatham, Ga.
Lawrence Addicks, Perth Amboy, N. J.
J. M. Sherrerd, High Bridge, N. J.
John Lilly, Lambertville, N. J.
W. J. Johnston and Mrs. Johnston, New York.
Edwin C. Johnston, New York.
Mrs. E. E. Olcott, Miss Olcott, Miss Elizabeth B. Olcott, New York.
A. H. Fay, New York.
H. H. Stoek, Scranton, Pa.
Walter Harvey Weed, Washington, D. C.
George Ormond, Allentown, Pa.
Mrs. Thos. D. Whitaker, Allentown, Pa.
Paul T. King, New York.
E. H. Williams and Mrs. Williams, Sharon, Pa.
Wm. P. Blake, Tucson, Ariz.
A. W. Fiero, Chicago, Ill.
C. G. Atwater, New York.
Irving C. Bull, Columbia University.
John Hays Hammond, New York.
E. G. Williams, Colon, Colombia.
C. W. Hayes, Washington, D. C.
Thos. N. Stiles, New York.
Frank H. Harling, Tucson, Ariz.
T. A. Rickard and Mrs. Rickard, New York.
Theo. Dwight, New York.
Henry Louther, Hartford, Conn.
Leonard Waldo, Bridgeport, Conn.
Julian Kennedy and Mrs. Kennedy, Pittsburg, Pa.

The meeting opened on Tuesday evening in accordance with the programme. The attendance was good, and the addresses by President Hadley, of Yale University and President Olcott, of the Institute, were heard with much interest. The memorial of Clarence King was presented by Dr. Raymond.

At the session in Sheffield Hall on Wednesday morning, it was announced that the reading of Mr. Atwater's paper on By-product Coke Ovens would be postponed to the evening, on account of the greater convenience at that time of presenting the lantern-slides illustrating the paper. President Olcott having been called to New York unexpectedly, Mr. John Hays Hammond occupied the chair.

Mr. Walter Harvey Weed presented in abstract the two papers on Ore Deposits which he had prepared for this meeting. One of these papers will be found on another page. Dr. Raymond then gave brief digests of the paper on Coking in Bee-hive Ovens, by Mr. Charles Catlett, and also of that on the Valuation of Mines, by H. D. Hoskold. He also gave a digest of his own paper on the Definition of a Mining District.

GOLD PRODUCTION OF GREAT BRITAIN.

Mr. J. Malcolm Maclaren says, in the London *Mining Journal*, that, although records of the gold yield of the British Isles have been kept for more than 40 years, there has yet been published no returns showing the total gold yield of the British Isles. The following figures, therefore, showing the output of the four components of the United Kingdom may not only be of interest, but may serve to fill up a gap in the mineralogical records:

England.—In Cornwall, though nuggets have been picked up in the course of tin streaming operations from time immemorial, the yield has never been sufficiently great at once time to justify record. During 1852 and 1853 the neighboring county of Devonshire produced £581 worth of gold from the Britannia and Poltimore mines, near North Molton.

Wales.—The gold of North Wales was discovered about 1843, but it was not until 18 years later that gold in any quantity was raised. From 1861 to 1867 the yield was very satisfactory, but it fell away very rapidly, and for 20 years the yield was very small, some years, indeed, being blank. In 1888, however, the discovery of the Gwynfyndd lode gave an impetus to Welsh gold mining, which is not yet exhausted. The record yield is that for 1900, when gold to the value of £52,147 was produced. In 1901 the estimated total was £21,000. The total Welsh output prior to 1888 was £71,693; from 1888 to 1901, inclusive, it was £208,855.

Scotland.—The first recorded gold field in Scotland was that of Crawford Moor, discovered about 1511, and worked spasmodically for a century, the last systematic workings being those of Stephen Atkinson, about 1616.

At the present time it is, of course, impossible to estimate with any approach to accuracy the quantity of gold produced by the Crawford Moor alluvial deposits during the sixteenth and seventeenth centuries. Pennant, without quoting authorities, says: "In the reign of James IV and James V vast wealth was procured in the Leadhills from the gold found in the sands washed from the mountains; in the reign of the latter not less than £300,000 sterling." Dr. Lauder Lindsay, with authorities equally obscure, places the yield still higher, £500,000. In a matter which, from the conditions of working and from the lapse of time, must necessarily be of considerable uncertainty, it is advisable to accept those authorities who speak with the most immediate knowledge of the subject. In this case the only authority is a letter of one George Bowes, who had, for a time, charge of the sluicing operations at Leadhills. Bowes, writing about 1605, and speaking of a yield which had taken place during his own and part of the preceding generation, says that "the golde gotten thearin is of greater value than £100,000." This estimate is probably rather over than under the mark, though indeed much of the Scottish coinage of the time was minted from native gold.

The gold deposits of the Kildonan, near Helmsdale, in Sutherlandshire, were discovered in November, 1868, and were worked more or less vigorously until the end of 1869. During the short period that these gravels were worked, royalty was paid on £3,000 worth of gold, but as the temptation to conceal the greater portion of the gold discovered must have been almost irresistible, it is probable, as estimated by Dr. Joass and others, that the total amount recovered by the diggers was not less than £12,000.

Ireland.—In September, 1795, the gravels of the Ballinvalley stream, which flows into the Avoca River, at Woodenbridge County, Wicklow, Ireland, were found to be auriferous. A rush of peasants took place, and work with the crudest of appliances was carried on for about 6 weeks, when the news came to the ears of the authorities, and the further operations for the recovery of the alluvial wealth of the Ballinvalley, or Gold Mines River, as it came to be called, were carried on by the government of the day. Owing to the outbreak of the rebellion, operations were suspended in May, 1798, and were not resumed until 1800. In 1803 the gravels became so poor that the directors advised an abandonment, to which recommendation effect was immediately given. Since that time the valley has been spasmodically worked by the peasants and by various companies. Mr. S. H. Kinahao, of the Irish Geological Survey, who has devoted considerable attention to the subject, estimates the gold yield of the district at £28,855.

The total yield of gold from the British Isles may, with the exception of the quota from the Leadhills, in Scotland, therefore be computed with sufficient approach to accuracy to give considerable value to the estimation:

England (North Molton, 1852-3)	£581
Wales (Dolgelly area since 1844)	281,497
Scotland (Leadhills area, 1511-1616)	100,000
Sutherland (1868-1869)	3,000
Ireland (County Wicklow, 1795-1879)	28,855
Total gold yield of British Isles	£413,933

Of this sum it will be seen that nearly all, with the exception of that from the Leadhills, has been obtained during the last century, and slightly more than half of it (£208,855) during the last 14 years.

THE BOHRTECHNIKER VEREIN.—The ninth annual meeting of this society, whose specialty is found in matters relating to the sinking of shafts, was held in Düsseldorf, Germany, September 15-18. Among the papers read was one by Herr Wolski, of Boryslav, on "The Hydraulic Boring System," and one by Herr Fauck, of Vienna, on "Problems of Deep-boring Work."

COAL IN GERMAN EAST AFRICA.—The coal in the German territory north of Lake Nyassa (Songwe District) is, it is stated, to be worked by skilled mining engineers who are coming out for that purpose. The seam they propose starting on is 4 feet thick and very easy of access, but is situated at some distance from the lake.

PIG IRON PRODUCTION IN GERMANY.—The output of the German blast furnaces in August was 736,836 metric tons of pig iron, showing an increase of 30,915 tons over July and an increase of 93,505 tons over August, 1901. For the 8 months ending August 31 the production was as follows, in metric tons:

	1901.	1902.		Changes.
Foundry iron	997,467	1,051,292	I.	53,825
Forge iron	940,631	797,580	D.	143,051
Bessemer pig	319,691	260,787	D.	58,904
Thomas (basic) pig	2,988,850	3,346,874	I.	358,024
Totals	5,246,639	5,456,533	I.	209,894

Foundry iron showed a small increase and basic pig a considerable one; while there were decreases in forge iron and bessemer pig. The total gain this year was 4 per cent.

Exports of pig iron from Germany for the 8 months were 196,042 tons, against 78,991 tons in the corresponding period of 1901; an increase of 117,951 tons, which was largely due to shipments to the United States.

MEXICAN METHODS OF SILVER ORE TREATMENT.

By J. Nelson Nevius.

The Mexican method for the extraction of silver from low grade ores, which is known as the patio process, was developed in the middle of the sixteenth century by Bartólomé Medina in the famous mining district of Pachuca, State of Hidalgo.

The accompanying photographs illustrate the process as practiced at a small *hacienda de beneficio de metales,* the apparatus shown being purely Mexican.

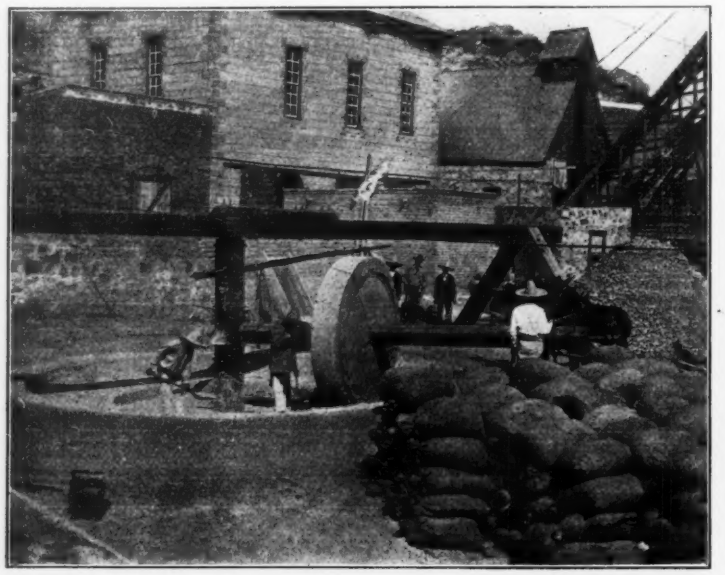

FIG. 1.—CHILEAN MILL.

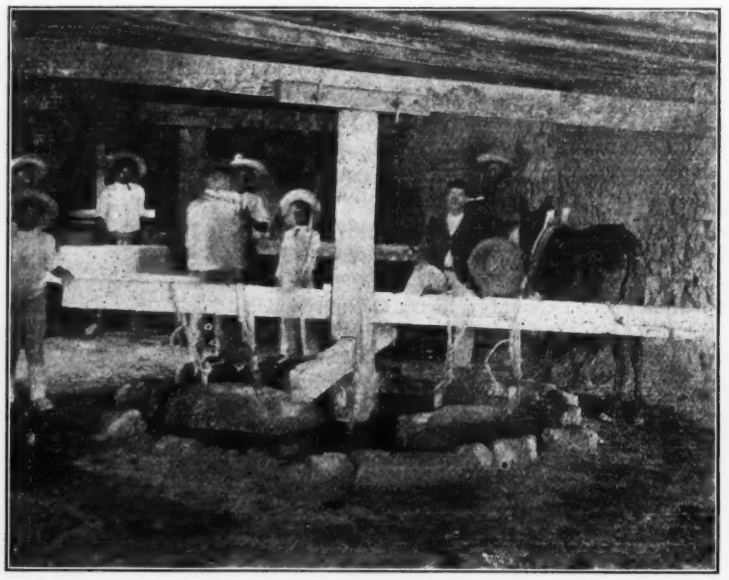

FIG. 2.—TAHONA, OR ARRASTRA.

The mechanical part of the process is extremely simple, but the chemical changes that take place are still in dispute. Sr. Don Manuel Valerio Ortega, one of the best authorities on the subject, in his paper presented to the Mexican meeting of the American Institute of Mining Engineers, discussed the chemistry of the process in detail. He states that by means of his patented improvements on the process he has recovered as high as 95 per cent of the assay value of ores in one day's treatment on the *patio.*

In brief, the process is as follows: The ore from the mine is broken by hand to about 2½-inch mesh; the low grade material is separated from the smelting ore and is usually sold to the *haciendas de beneficio.* Here it is first dry-crushed under a Chilean mill to the size of coarse sand and then wet-crushed in the arrastra to a fine mud. This mud is spread in the *patio,* or yard, to partially dry, and when of the proper consistency it is made into *tortas* or circular cakes, from 12 to 18 inches deep and often 60 feet in diameter. About 5 to 6 per cent of common salt is mixed into the *torta,* which is then left for one day. Copper sulphate is added the next day after the salt, the amount required varying with the character of the ore and also with the temperature—the same ore requiring more sulphate in cold than in hot weather. Immediately after the copper sulphate 8 or 9 units of mercury to each unit of silver are added in a finely divided state, obtained by squeezing it through chamois skin and sprinkling it over the torta. The torta now resembles thick mud, and is agitated by mules trampling through it until amalgamation ceases, which may require a month or more. After the process is complete the amalgam and free mercury are recovered by washing the torta in tanks with water, or on *planillas,* and the amalgam squeezed dry and then heated to distil off the mercury.

Fig. 1 shows the Chilean mill. The stone core of the wheel is of quartz porphyry 5½ feet in diameter, 1 foot 9 inches thick at the hub and 1 foot 3 inches thick at the face. The cutting of such a stone costs about $75 Mexican. The 4-inch steel tire is wedged on with wood. The circular steel crushing plates on which the wheel travels are 4 inches thick, 1 foot 6 inches wide and 16 feet outside diameter. The ore is shoveled on the crushing plate in a narrow ridge, and when crushed is brushed into a depression inside of the plate. Such a mill will crush 7 tons of ore per day to pass an eight-mesh screen.

Fig. 2 shows a *tahona,* or arrastra, in which the ore from the Chilean mill is wet-crushed to pulp by means of hard stones having a flat under-surface, which are dragged by mules over a smooth floor of similar stones. These stones are usually of either quartzite or quartz porphyry.

Fig. 4 shows a small *torta* in process of amalgamation.

Fig. 3 shows a primitive form of barrel amalgamator, called a *tonel* by the Mexicans. This is used for the reduction of cerargyrite, as the chloride of silver does not yield to the *torta* process of amalgamation. The chloride ores, after crushing, are placed in the barrels with scrap iron (copper being too expensive for the smaller operators), water and mercury, and the barrels revolved about the center-post by mules.

Fig. 5 shows the *planillas* which are often used to wash the amalgam out of the *torta.* The photograph shows them in use on the *patio* of a large mine for concentrating raw ore after crushing with the Chilean mill shown in Fig. 1.

For concentrating the fines that come from a stope of friable ore, such as galena or pyrite, the *planillas* give a product equal to that of machine jigs, and at a very low cost. When the specific gravities of ore and waste are nearly the same, it is too crude to be serviceable. Fig. 6 shows a *planilla* in section. It is 12 feet long by 6 feet wide and the clay floor rises from 12 to 18 inches—the slope increasing with the difference in specific gravities of the ore and waste. The charge is placed against the boards at the upper end and water a few inches in depth is placed at the lower end. This water is dashed over the ore by

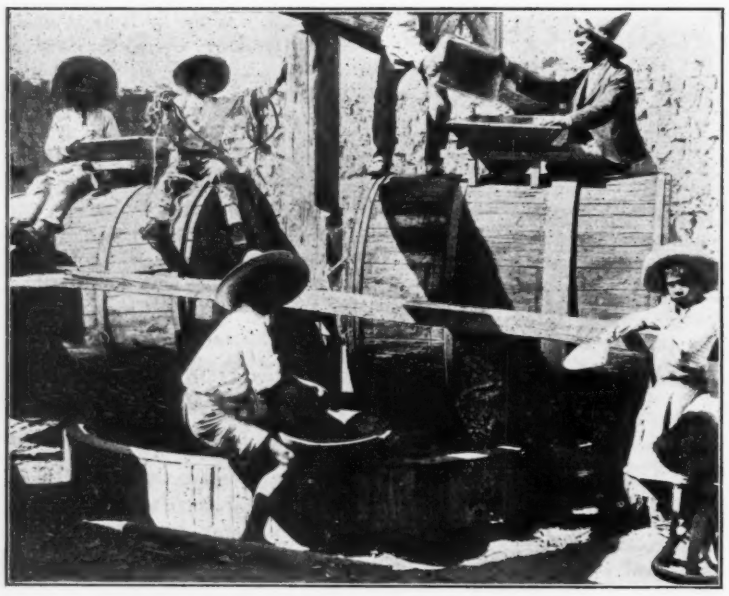

FIG. 3.—TONELES, OR BARREL AMALGAMATION.

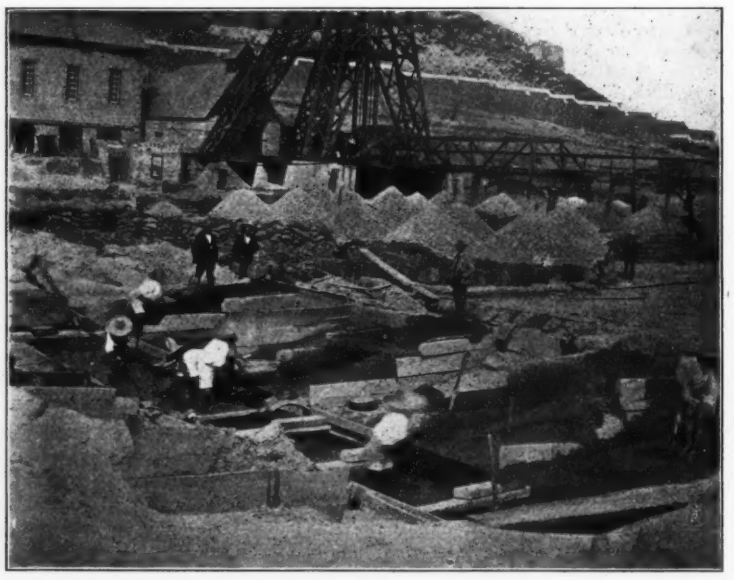

FIG. 5.—PLANILLAS FOR CONCENTRATING.

means of wooden bowls or steer's horns, and washes the waste and fine ore down the slope. The material which collects between the water line and the point where the slope changes is thrown back and washed repeatedly. The washing leaves the heavy minerals at the upper end remarkably free of waste. These are scraped off after each washing. The final particles of heavy minerals are carried with the waste down to the edge of the water and there deposited in a ridge along with coarse particles of waste. The

FIG. 4.—TORTA, OR PATIO AMALGAMATION.

water that is drawn off into the tailings trough carries very little of value—chiefly the inevitable float. In a day of ten hours one man working a *planilla* can concentrate 2 tons of raw fines.

SAULT STE. MARIE CANAL TRAFFIC.

The official report of the Sault Ste. Marie Canal gives the total freight movement through the canal from the opening of navigation up to October 1 as follows, in net tons:

	1901.	1902.		Changes.
West-bound	3,904,553	4,166,078	I.	251,525
East-bound	16,464,512	22,146,844	I.	5,682,332
Total	20,369,065	26,312,922	I.	5,943,857

The total number of vessels passing through the canals this year was 17,164, against 14,561 for the corresponding period in 1901; showing an average cargo of 1,533 tons, against 1,399 tons last year.

The items of mineral freight included in the totals are reported as follows, the figures being in net tons, except salt, which is in barrels:

	1901.	1902.		Changes.
Anthracite coal	529,788	114,188	D.	415,600
Bituminous coal	2,896,483	3,455,608	I.	559,125
Total coal	3,426,271	3,569,796	I.	143,525
Iron ore	13,583,867	18,536,170	I.	4,952,303
Pig and manufac. iron.	112,990	134,598	I.	21,608
Copper	61,983	85,060	I.	23,077
Building stone	32,709	30,332	D.	2,377
Salt, barrels	347,017	326,339	D.	20,678

There was a large gain in all articles except building stone and salt, which showed slight decreases; and anthracite coal, in which there was a heavy decrease, due to the strike.

MINING MACHINERY IN SIBERIA.—The British Consul-General at St. Petersburg reports for the benefit of British manufacturers that for mining machinery there is an opening which is yearly widening with the completion of the main trunk Siberian line. Pumps, lifts and other general machinery are in demand, especially if they present novel and genuine features. The sale of these, as also of tools for various purposes, might, he says, be pushed if a greater number of agents were employed and the prices reduced very closely to the German and American levels.

CONTACT METAMORPHIC AND OTHER ORE DEPOSITS NEAR IGNEOUS CONTACTS.*

BY WALTER HARVEY WEED.

Contact metamorphic ore deposits include (1) copper deposits found at the actual contact with intruded igneous rocks, *Kristiania type*, (2) deposits in sedimentary starta, altered by contact metamorphism, in which the ore is confined to a particular bed. For copper ores this is designated as the *Cananea type*. A distinction is made between these two classes of copper deposits and those of exactly similar geologic structure and occurrence in which free gold and tellurides of gold and bismuth, and another example in which highly auriferous arsenopyrite, are the only ore minerals. All these deposits are genetically connected with igneous intrusions; first, structurally in the formation of ore channels; secondly, by the deposition of ore by pneumatolytic or solfataric action. The especial and new fact shown is that thermal metamorphism effects pronounced physical changes in the sedimentary rocks of the contact zone by which certain strata are made porous while other strata are relatively impervious; that the vapors and gases given off by the covering igneous magma, as well as the circulating waters of the later phase, penetrate these porous rocks and deposit metallic sulphides and tellurides.

Why Ore Deposits Are Common About Igneous Contacts.—The borders of igneous masses and igneous contact areas are ore-bearing because (1) differentiation of the cooling magma tends to segregate the highly basic and metal-rich portion at the border of the cooling mass; (2) pneumatolytic processes are most active about the borders of igneous rocks; (3) the force of the intrusion may have shattered the adjacant rocks, forming cracks and fissures that become channels for circulating waters; (4) the shrinkage of the intrusion due to progressive cooling after solidification, and the shrinkage of the heated contact zone produce contraction fissures; (5) certain sedimentary rocks baked by thermal metamorphism as a brick is baked in burning becomes porous and are easily traversed by vapors and waters.

Contact metamorphic deposits are characterized by gangue consisting essentially of garnet-epidote-actinolite, calcite and other lime-alumina silicates.

A.—Deposits confined to contact:

Chalcopyrite deposits, Kristiania type.
Gold ores, Bannock type.

B.—Deposits impregnating and replacing beds of contact zone:

Chalcopyrite deposits, pyrrhotite ores, magnetite ores, Cananea type.
Gold tellurium ores, Elkhorn type.
Arsenopyrite ores, Similkameen type.

To the examples of Kristiania type described by Lindgren are added Jimenez, Mexico, and Birch Creek, Montana.

The Bannock type is distinguished by occurrence of free gold and telluride of gold with more or less hematite in and along contact with diorite boss, where garnetiferous rocks offered receptive masses. Also replacements of marbleized limestones along contact. The Cananea type, named from ore bodies at La Cananea, Sonora, Mexico, is characterized by mineralization of particular strata of altered limestone tilted at high angles and forming cover over igneous intrusion, or lying on side of intrusion near contact, of which Boundary Creek, B. C., furnishes examples.

The Elkhorn type is characterized by tetradymite and auriferous bismuthinite in a stratum of impure limestone altered to a mixture of garnet and diopside by an instrusive mass near by, said ore body being capped and underlain by less previous strata. The Similkameen type is structurally like the last mentioned, but the ore consists of auriferous arsenopyrite, accompanied by free gold.

The subject of contact metamorphism is discussed so far as it relates to changes favoring ore deposition and the changes of mass volume and mineral composition due to contact metamorphism as described by Barrell, are shown to be essential elements in the genesis of ore deposits.

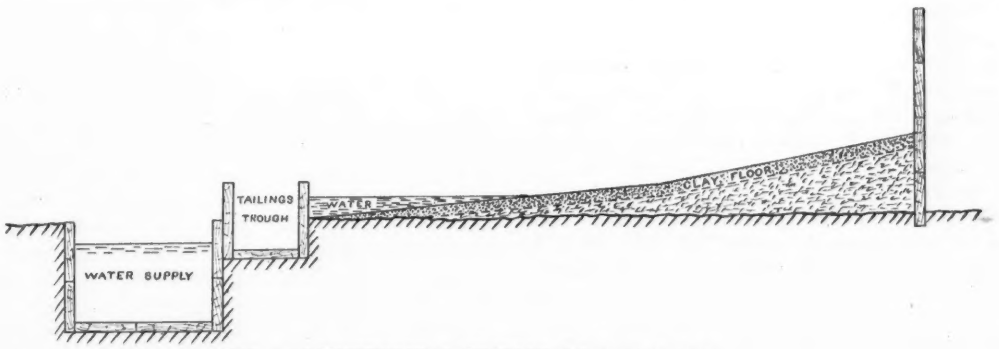

FIG. 6.—LONGITUDINAL SECTION OF A PLANILLA.

Minerals radial to igneous contact are shown to result from the mineralization of contraction cracks, in the same way that Pirsson has shown radial dikes to be formed. Such veins are richest near the contract because, as shown by Kemp, the basic border of the igneous rock is richer in metals than the main mass of the intrusion.

DISCOVERY OF QUICKSILVER IN INDIA.—Important deposits of quicksilver ore are said to have been discovered in the vicinity of Devil's Hill, between Tellicherri and Cannanore, in the Presidency of Madras, India.

IRON-MAKING IN TUNIS.—French engineers are at Bizerta, in Tunis, preparing the ground for the installation of blast furnaces to work the minerals extracted in the region of the Nefzas.

*Abstract of a paper read at the New Haven (Conn.) meeting of American Institute of Mining Engineers, October, 1902.

THE KANSAS COAL MINES OF THE MISSOURI VALLEY.

By W. R. Crane.

There are three coal bearing horizons in Kansas, namely, the Upper and Lower Carboniferous and the Cretaceous, of which only the first two named produce true coal; the last furnishes only lignite, while of all the coal producing strata in the State over 75 per cent of the output comes from the Lower Carboniferous.

The coal strata of the Lower Carboniferous formation outcrop but a short distance from the Missouri line, forming in an irregular line, which trends in a northeast and southwest direction across the southeast corner of the State. Probably not more than 10 miles of outcrop can be traced in Kansas, but it can be followed quite readily for many miles in Missouri. The coal strata, which are the main producers of this formation, go by the trade names of "Weir-Pittsburg Upper and Lower," and have been mined and discovered by bore-holes at a sufficient number of points to make it certain that their inclination to the north and westward is about 4 and 20 feet, respectively, to the mile. There is also an intermediate stratum, which maintains a fairly uniform position with respect to the Upper and Lower strata. Passing to the northward, we come to the Missouri Valley District, where coal is mined at a depth of about 713 feet, varying, however, from 710 to 720 feet, although coal occurs at the 748 and 988-foot points, each of which is reported as being a 24-inch stratum, while in one case at least—the Atchison prospect hole—the seam has proven to be 36 inches in thickness.

The mines of this district are located at or in the neighborhood of Leavenworth and Lansing. The coal mined is found in the Lower Carboniferous strata, and the three horizons noted may be the Upper, Intermediate and Lower of further south, but any attempt at correlation between these coals and those of the southern part of the State would be largely conjectural further than to show that they belong to the same formation.

Below is given a short description of the typical mines of this district. The mines chosen are the Home-Riverside No. 1—the best equipped of those at Leavenworth—the Carr coal mine, the latest mine opened up in the district, and the State mine at Lansing, in connection with which has been established a brickyard.

Home-Riverside Mine No. 1.—This mine occupies a position half way between mines No. 2 and 3, the shafts of which are about a mile both up and down the river from it. These three mines have been worked so long and vigorously that a large portion of the coal has been worked out, not only along the west bank of the river, but also under the western and middle part of the river bed. The coal rights owned by the Home-Riverside Coal Company, with location and relative amount of work done in each mine is shown in Fig. 1. The plans of the workings of mines Nos. 1 and 2 are given in Fig. 2. These two mines, located about a mile apart, are connected by a tunnel, which was driven as a safeguard in case of accident, and is not used for ventilation purposes, each mine having a separate fan for its own workings. In sinking the shaft, at 600 feet in depth, a flow of mineral water was met, which is really the only source of water in the mine. It is pumped out and furnishes the miners with drinking water. The analysis of the water is as follows: Common salt, 12.73 grains per gallon; Glauber's salt, 10.62; Epsom salt, 32.12; calcium sulphate, 22.40; calcium carbonate, 14.03; silica, 1.30; iron, alumina, etc., 0.12 grain.

In this connection it may be of interest to state that the deep-seated waters from mine No. 3 (formerly the Leavenworh Coal Company's mine) are pumped to a natatorium, where the people of the city can bathe at a nominal cost, in water which differs but little from sea water.

As a rule the mines are so dry that the gangways require sprinkling, which is accomplished by a car bearing a barrel of water, which is provided with a hose and sprinkler. Often, however, only a hose is employed, which is jerked back and forth as the car is drawn forward through the gangway.

As a rule these mines have very level floors, but occasionally such phenomena as "horse-backs" and "bells" are met with. Several decidedly disturbed places have been encountered, not only in this mine, but in Nos. 2 and 3, as well, which are generally in the form of troughs or comparatively short and narrow synclines, a peculiarity of which is that the trough is in the majority of cases disturbed and often badly broken. The effect of stretching of the formations, including the coal stratum, is very marked in many instances. The largest of such disturbed portions was encountered in the old Leavenworth Coal Company's mine, for the description of which I am indebted to Mr. John Carr, former manager. As the work at this point has long since been abandoned, it was impossible to examine them in person. According to Mr. Carr, while mining in the rooms situated in the northern and eastern portion of the mine, at a point about midway of the river, the floor of the rooms was found to slope downward gradually at first, and further on more rapidly, until within only a few rods of the commencement of the slope a fairly uniform inclination of about 1 foot to 4 was struck and maintained for a distance of some 400 feet, when suddenly the coal and accompanying strata terminated in a nearly vertical face. The thickness of the coal stratum increased from 30 inches on the level and throughout the greater part of the slope to 36 and 48 inches at its end, which showed signs of a compression. It was decided to search for the continuation of the stratum by means of a drift, which was run on the level through a body of fire clay, broken shale and sandstone, in which were found many fragments of coal, several weighing in the neighborhood of a ton. After passing through 68 feet of this broken ground, coal was again struck, which exhibited the same phenomena as that on the other side of the disturbance, and subsequent mining showed that it extended upward in an unbroken bed and at about the same inclination as the downward slope first noted. The width of this basin is about 750 to 800 feet, the length about 1,000 feet. It extends in a northwest by north direction. A cross-section through the basin is shown in Fig. 3. An engine plane, driven by compressed air, was employed in drawing the coal and waste from the basin, but the work there was soon abandoned on account of the trouble and expense of supporting the workings and pumping out the large volume of water which entered from below. Other minor basins encountered in the other mines have been worked around, otherwise they have not interfered with the regular mining operations. Strange as it may be, they seem to furnish an outlet for the mine waters, rather than introduce water into the mines, as might be expected.

The equipment of mine No. 1 is as follows: The shaft is 9 by 16 feet and 708 feet deep, with a 30-foot sump—the total depth of the shaft being 738 feet. It is divided into three compartments, two for hoisting, each 5 by 9 feet in the clear and provided with double guides for cages, and an air shaft, 4 by 9 feet.

A Litchfield direct-acting hoister is driven by duplex 24 by 36-inch engines, provided with link motion reversing gear and band-brakes; the hoist has a 10½-foot wood-lagged winding drum. On the drum wind two 1⅛-inch crucible steel hoisting ropes, 900 feet long, which run over two 10-foot sheaves placed on a 50-foot top frame. Connecting with the ropes are two Norway iron and wooden frame cages, which have a capacity of two pit cars each.

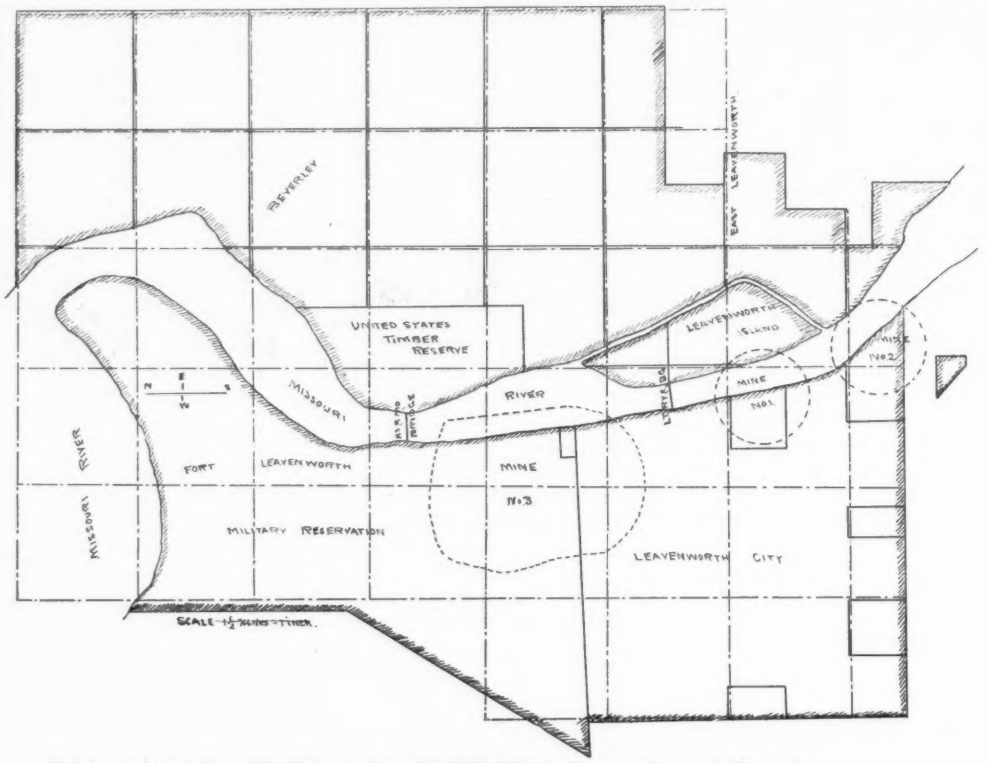

FIG. 1.—COAL AREA OWNED BY HOME—RIVERSIDE COAL MINING COMPANY.

Ventilation is provided by a fan 20 by 8 feet, driven by an Atlas engine, 12 by 14-inch cylinders. The exhaust system is that employed.

Power is furnished by two batteries of two and four boilers respectively; the former has two Newsome steel boilers, 48 inches by 18 feet, with 6-inch flues; the latter has four Newsome steel boilers, 42 inches by 20 feet, with 16-inch flues. In the boiler room are a feed pump, 5 and 3½ by 5½ inches; a boiler-feed pump, 6 by 4 inches, and a Stillwell hot-water heater.

The mine is freed from water by a Hall steam pumping engine, 10 by 24 inches, making direct connection with a 24-inch walking beam, which in turn drives a 2½-inch jointed pump rod, 720 feet long. The rod works inside of a 3-inch column pipe, 730 feet long, which is made of extra heavy iron. At the bottom of the pipe is attached a 4-foot brass working barrel, in which the working valve operates, while a clack valve below the working barrel holds the column of water during the down stroke of the working valve. Besides this pump there is a Deane steam pump, connecting direct with two 1½-inch rods, 70 feet long, which work in pump cylinders.

Several conveyors are employed in connection with the preparation of the coal; three Harrison conveyors, two 80-foot and one 50-foot long; one bucket conveyor, 60 feet long, and one screw conveyor, 25 feet long. All of them are driven by a Nagle engine,

10 by 18-inch cylinders. The blacksmith shop is well equipped with engines and tools.

All the ground work of mining is done by hand, and the coal is hauled by mule power. The capacity of the pit cars is about 1,500 pounds. The output of the mine ranges from 500 to 600 tons per day. The number of men employed varies largely with the seasons, averaging 115 to 120 in the summer and about 300 in the winter, which is not due to lack of laborers, but to a falling off in the consumption of coal.

An outline of the methods employed in preparing the coal for market is given below:

1. Mine run roal, hoisted in pit cars, by chute to 2 or 9.
2. Parallel bar screen, or grizzley, 12 feet long, inclination 21°, bars ½ inch, 1⅞ inch spaces; over-size to 3; undersize to 4.
3. Lump, by chute to cars.
4. Grizzley, 12 feet long, inclined 25°, ⅜-inch bars, 1-inch spaces; oversize to 5; undersize to 6.
5. Nut, by chute to cars.
6. Slack by chute to 7 or 8.
7. Cars, coal for shipment.
8. Elevator, by car to boiler room.
9. Locomotive coal pockets, of which there are six provided with gates midway to facilitate the handling and controlling the amount of coal drawn off.

Coal pockets for home consumption, which are provided with parallel bar and perforated metal screens. There are three sections, two on the south and one on the north side of the tipple building. These three sections contain in all 23 pockets. The grizzlies on the south side have 1¾-inch spaces, formed by ½-inch diamond bars; the screens on the north side are perforated metal 2-inch and 3-inch holes, metal ¼ inch thick. The slack from these screens passes by chutes and conveyors to the slack chute leading to the cars or to the elevator, where it joins similar material on its way to the boiler room. Coal is hauled into the city to the larger consumers, at least, in large drays drawn by three horses.

Carr Coal Mine.—After selling its mine in North Leavenworth, the Carr Coal Mining Company selected a site for a new mine at a point about two miles south of the Soldiers' Home, on the line of the Kansas City & Leavenworth Electric Railway. This mine is known as the Carr Coal Mining and Manufacturing Company's mine, and has been in operation for about six months (Fig. 4). As yet the mine buildings are incomplete, and more will be added as occasion demands. The shaft is 685 feet deep, double hoisting compartment 4 by 7 feet, and air shaft, 2½ by 7 feet, with the main gangways running north and south and east and west. Up to the present time between 10 and 12 acres have been mined out.

The mine is equipped with a Litchfield direct-acting hoist, which is driven by duplex 24 by 36 inch engines, controlled by link-motion reversing gear and band brakes. The drum is wood lagged, 10 feet in diameter and 8 feet long, employing a 1⅛-inch steel hoisting rope. A battery of three flue boilers furnish power to the hoister, shaker, and fan, engines and pump. The fan engine was made by the Erie Iron Works, and has an 8 by 16-inch cylinder. The fan is 14 feet in diameter and 4 feet face; the exhaust system of ventilation is therefore employed. A 20 horse-power engine is employed in driving the shaking screen, for which purpose 10 horse-power are necessary. The screen is given a movement of 8 inches, at about 80 strokes to the minute. A dumping device, devised by Mr. William Carr, operates in emptying the cars, as they come from the mine, Fig. 5. It is placed directly over the junction of two chutes, into which it dumps the coal; one of the chutes is for mine-run coal, for city and local use, the other is for making a graded or sized product for the general market. There are six chutes for local trade, and at present only two for loading cars, or producing shipping coal.

The top frame is about 45 feet to cap, and supports two 6-foot cast-iron sheaves. The back ways are 60 feet long, and extend from a point a few feet from the top of the frame to another point on the ground about 20 or 25 feet from the corner posts of the top frame. All of the timbers of the top frame are 8 by 8 and 9 by 9 inches. About 20 feet from the ground is the floor of the mine building, or tipple, which is equipped with a series of tracks; the main lines extend from the front of the shaft lengthwise of the landing floor, and on either side of the automatic dumpers. From the side lines branch tracks run to a central track, which leads to two semi-automatic dumpers, which may be turned to the right or the left into different chutes, as stated above. Beyond the dumpers the track turns both to the right and left, and unites with the side lines which lead to the shaft. On the back of the shaft the tracks extend into the room for 15 to 20 feet, and are arranged to facilitate the handling of cars; they also connect, by lines running between the sides of the shaft and the building, to the main tracks on the dumper end of the room. The cages have a capacity of one pit car each.

The mine is quite dry up to the present time, so that no special provision has been made regarding the handling of considerable quantities of water. The excess of waste is, at present, largely used in making fills by the railroads, and to facilitate its handling a special chute is provided, into which the waste is dumped from the pit cars, thence into the flat cars.

An outline of the method of preparing the coal for market is as follows:

1. Coal hoisted in pit cars, capacity 2,000 pounds, to 2.
2. Dumpers, by chute to 3, or 7.
3. Shaking screen, 40 feet long, inclination 1 to 6, with four sections of perforated screens; first section, 3 feet long, 5/8-inch holes to 4; second section, 6 feet long, 7/8-inch holes to 4; third section, 12 feet long, 1½-inch holes to 5; fourth section, 12 feet long, 3½-inch holes to 6.
4. Slack by chute to cars.
5. Nut by chute to cars.
6. Lump by chute to cars.
7. Coal pockets.

If desired, the coal in 7 may be run over 1½-inch perforated screens placed in the bottom of chutes leading to the pockets, by means of which the slack is largely removed; this is the general method of procedure.

Three products of coal are produced by this method of sizing, but any change in the market can readily be accommodated by a simple change of screens, a number of sizes being kept on hand for that purpose. A well-equipped blacksmith shop is maintained in connection with the mine.

The capacity of the mine at the present time is about 300 tons per day, two shifts. From 150 to 160 men are employed daily. All mine work, as drifting and undercutting of coal, is done at present by hand, the shaft was, however, sunk by compressed air drills.

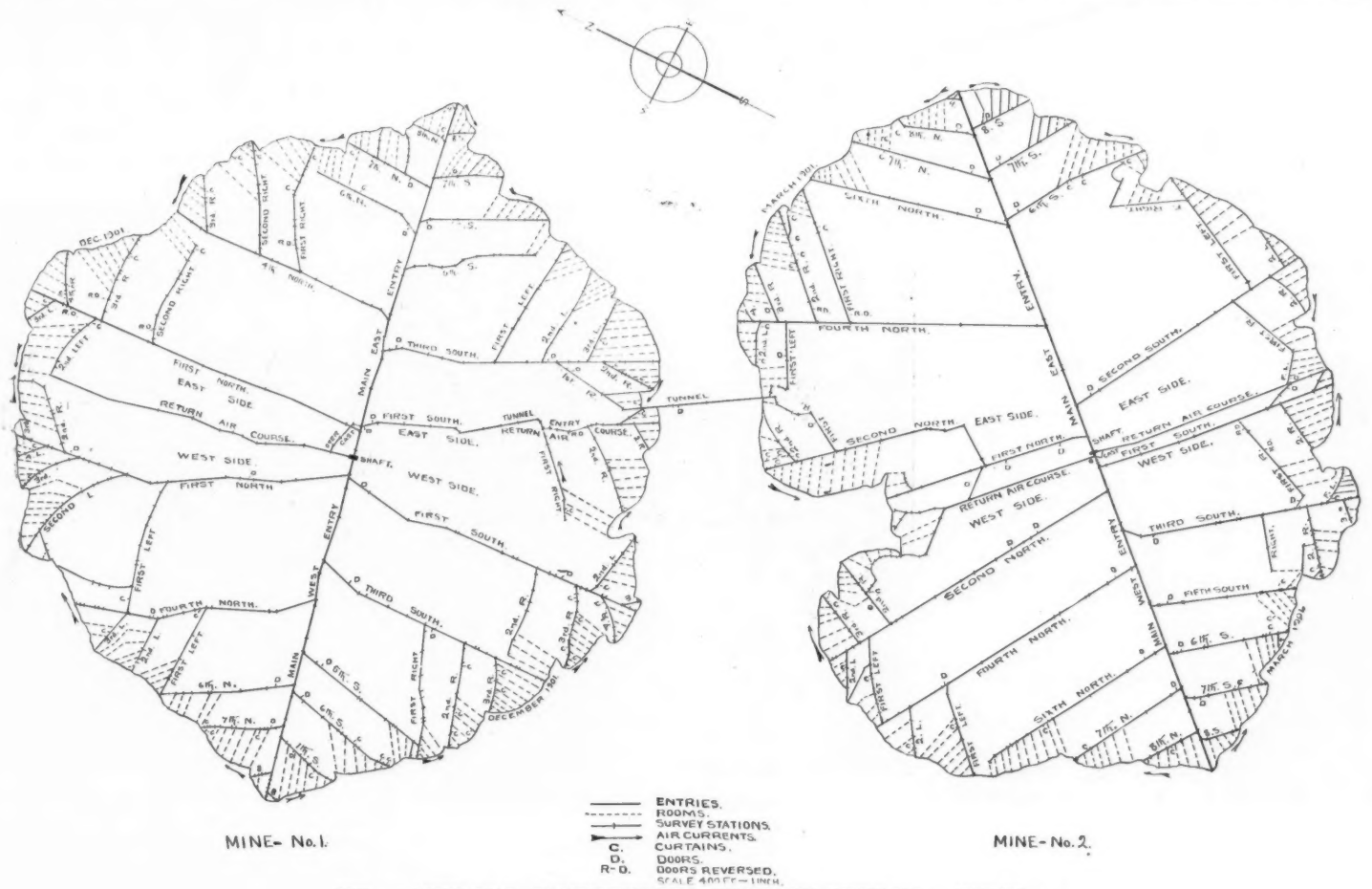

FIG. 2.—MINE MAP, HOME-RIVERSIDE COMPANY'S MINES NO. 1 AND NO. 2.

The State Mine.—This mine (Fig. 6) is operated as one of the departments of the State Penitentiary at Lansing, and is probably the most successful and paying of all similar established departments. Coal for all the State institutions is furnished by this mine, and, as there are no coal pockets or other facilities for storage, the output must vary with the consumption of coal, so that in the winter it is much greater than in the summer. The disposition of the working force must therefore be altered to meet the varying demand. Most of the mining up to the present time has been carried on to the northward of the shaft, and it will not take many years at the present rate of extraction to exhaust the coal rights owned. Negotiations have been carried on for some time in regard to the purchase of Staiger's Island, in the Missouri River, and all that now remains is for the Legislature to authorize the purchase. There are 800 acres in the island, and the price asked is $15 per acre. The Legislature in 1901 authorized the establishment of a brickyard, to be worked in connection with the mine, the object being to utilize as much of the waste as possible. About 30 tons of shale are sent to the brickyard per day. About 250 men are employed in the mine during the summer and 340 to 350 in the winter. Each miner, when alone in an ordinary sized room, is required to bring about 3 cars (½ ton to car) per day; when two miners work in a room somewhat above the normal size 5 cars are required per 10-hour day. Besides those engaged in mining the coal there is a pit gang of 38 men, whose duty it is to keep up the repairs. At present there are about 200 rooms which are open for mining. It is found necessary to leave a bracket of coal at the face, otherwise the pressure of the super-incumbent strata will make the fire-clay, below the coal, so hard and compact as to render undercutting extremely difficult. The top shears down from 2 to 3 inches, even over night, in lines parallel to the face. Each miner is provided with 3 picks, 2 shovels, 3 wedges (1 shale and 2 coal) and 1 hammer.

The main hoisting shaft is 9 by 16 feet and is divided into three compartments, each 5 feet 4 inches by 9 feet; two are employed for hoisting, while the third is an air shaft. The cages are made of Norway iron, with wooden frames, and have a capacity of 1 pit car each. They are operated by a directing acting Litchfield hoist, which is driven by duplex 24 by 48-inch engines, controlled by link motion reversing gear and hand brakes, and connect with a single wood-lagged drum, 12 by 10 feet, upon which winds a 1½-inch steel rope. A second shaft, constructed for ventilation purposes and as a means of escape in case of accident to the main hoisting shaft, is 10 feet 8 inches by 9 feet. This shaft is occasionally employed in hoisting coal. The cages are similar to those operated in the other shaft, but the rope is 1¼-inch. A second motion, or geared, Great Western hoist is installed at this shaft, which is driven by duplex 24 by 48-inch engines, and controlled by link motion reversing gear and band brakes. The drum is wood lagged and is 12 feet in diameter by 10 feet long. The cars are dumped by hand. There are two batteries, each of 4 150 horse-power boilers, which furnish power to the 2 hoisters, a 50 horse-power fan and screen engines and several pumps. Water is raised from the sump by a Cornish pump operated at the surface by a walking-beam engine. The pump has a 3-inch column pipe and 4-foot working barrel at the sump end. Besides the mine pump there are several boiler pumps located in the respective boiler rooms. The fan has blades 7 feet long by 4 feet wide, and connects by a tunnel 5 by 7 feet and 150 feet long with the safety shaft. The top frame is about 60 feet high, built of 9 by 9 and 10 by 10-inch lumber, and supports 2 6-foot cast-iron sheaves. The shaft is walled up with stone to a depth of 150 feet, and is cribbed the remainder of the way with 8 by 8-inch cypress, mortised at the corners, besides being supported and divided into compartments by buntons 6 by 8 inches spaced 4 feet by studdles. In connection with the mine is a well equipped blacksmith shop, which is in charge of skilled mechanics, chosen from those detailed for mine work. Mining is done wholly by hand, and mules furnish the traction power; there are 11 in the mines at present. The animals are well housed in stables located not far from the hoisting shaft and making direct connection with the up-cast.

An outline of the method of preparing the coal for shipment, except when mine-run is desired, is as follows:

1. Coal hoisted in pit cars, by chute to 2.
2. Grizzley, 12 feet long, with 2¼-inch spaces, inclination 20°; oversize to 3; undersize to 4.
3. Lump by chute to railroad cars.
4. Grizzley, 6 feet long, with 1¼-inch spaces, inclination 25°; oversize to 5; undersize to 6.
5. Nut by chute to railroad cars.
6. Slack by chute to 7 or 8.
7. Cars hauled by mule to boiler room or coking oven.
8. Bucket elevator 50 feet long to 9.
9. Revolving screen, 10 feet long, with 1-inch wind holes, inclination 2 inches to 1 foot; oversize to 10; undersize to 11.
10. Pea by chute to railroad cars.
11. Slack by chute to cars by mule to boiler house or coke-oven.

A coking oven is operated often enough to furnish coke, about 4 tons per week, for the bakery and kitchen. No slack is sold, all being used in the institution.

Electric lights are provided in the top works, kerosene torches at the foot of the shaft and stations, and cap lamps burning "Sunlight" oil or paraffine are used by the miners.

General.—Drift mining is carried on in a limited way about 3 miles south of Atchison, on the right bank of the Missouri. The coal thus mined belongs to the Osage shales, and has been correlated with the coals of this formation, which are mined further south.

Several attempts have been made to undercut the coal by machine, and for several years disk and cutter bar machines were employed by the Leavenworth Coal Mining Company in the mine at Leavenworth, but were finally abandoned. Two kinds of disk machines were used, the one being a thin cast-iron wheel in the periphery of which are fastened cutting tools, which point alternately up and down and are given a set to ensure sufficient room for the passage of the disk; the other form is constructed like a circular saw, the teeth being cut in the edge of the disk and given a set to prevent binding. The cutter-bar form is a slight modification of the disk machine, a cutter-bar being employed instead of the disk. Similar machines were used in the drift mines at Atchison, and in both cases were driven by electricity. No coal mining machines are now used in this district, the reason for which is readily understood, the floor or bottom of the coal stratum worked being bouldery and extremely hard. This makes the bottom so irregular that a machine run close to it is constantly striking the projecting bottom and is so reduced in speed that it chokes and stops completely on passing into the coal beyond. This has been the common experience with all forms of under-cutters experimented upon, and it will probably be many years before further attempts will be made along this line.

The Leavenworth Coal Company was the pioneer in the introduction of improved methods in coal mining in the States; it was the first to employ cable haulage in the form of the endless rope system, which was installed and operated in the mine in North Leavenworth for many years. There were two such lines of about 1 mile, but they were also finally abandoned, the only reason given being the expense of the system. As the grades are slight and along some gangways only 1 or 2 feet to the mile, it is claimed that mule haulage is almost as efficient and less expensive than any system of rope haulage.

Coal is weighed at the top in pit cars as it comes from the mine and later in the railroad cars just before shipment. The weight in the former case is to determine to the amount of coal which the miner is to be given credit for, in the latter case to give means of checking off the weight obtained at the delivery point.

Long-wall mining is the only system employed in this district, and, aside from the difficulty experienced in the use of machines for under-cutting, the mining of the coal is simple and easily accomplished. With the successful development of the mine being opened up at Atchison, considerable impetus will be given to the coal mining industry of this portion of the Kansas coal fields.

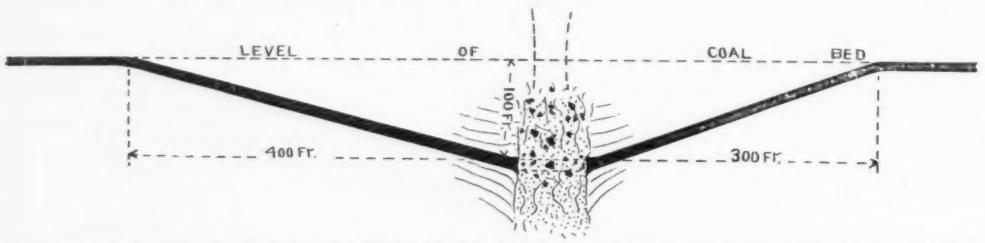

FIG. 3.—CROSS SECTION THROUGH DISTURBED AREA, IN THE OLD LEAVENWORTH COAL COMPANY'S MINE.

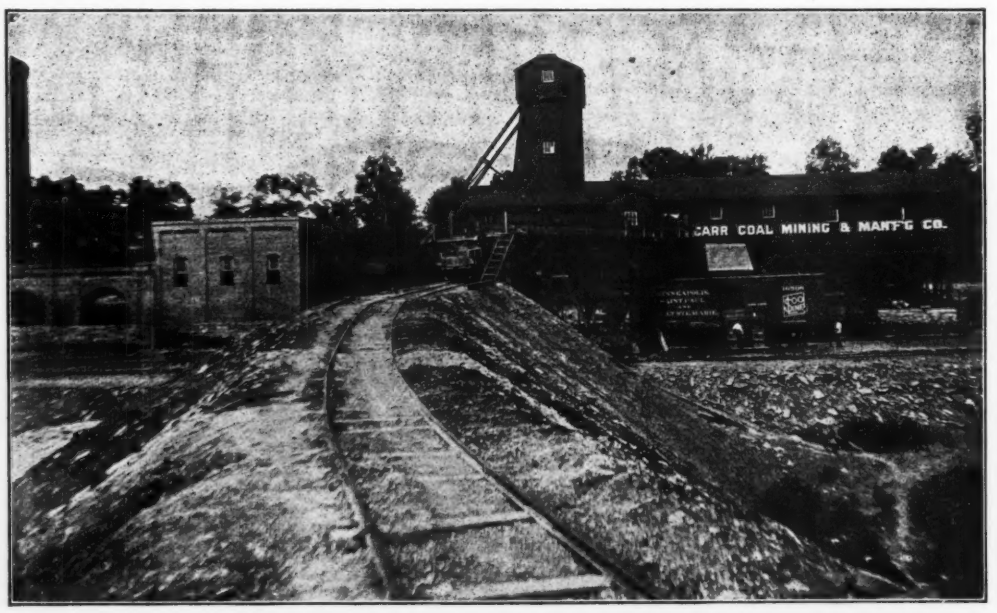

FIG. 4.—CARR COAL MINING COMPANY'S WORKS, NEAR LEAVENWORTH, KANSAS.

FINANCING SOME DEEP-LEVEL MINES IN THE TRANSVAAL.

The special commissioner of the London *Economist*, in his latest letter published in that paper, makes some sharp remarks on the methods of some of the newer and deep-level companies. We reproduce part of his letter below:

The financial question is not the least important of those on which the deep-level position hinges. It is an old story that most of the first row mines have cost over half a million sterling to bring to the producing stage. The average second row mines will cost a good deal more than this, and it has lately been pointed out that a mine in which the reef lies at 6,000 feet vertical depth will take £1,000,000—the precise figure quoted was £997,000—to properly equip. The first row mines have usually been in powerful hands, and the moneys required for them were readily forthcoming. The second row mines have not had the same out-and-out backing, and they have had usually to resort to big debenture issues. The financial position of some of these mines is still not properly assured. But the deeper the mines the weaker becomes the financial position of those responsible for their future. Take the case of the group which has floated South Randfontein Deep, Bantjes Deep, and South Village Deep. These three mines, in which the reef lies at an average depth of probably over 5,000 feet, will require an aggregate working capital of nearly £3,000,000. The aggregate working capital with which they were floated was £350,000. The flotation of deep-level areas seems to me to be altogether outrunning the resources of those responsible for their finance. The sums which will have to be put up in the next few years aggregate many millions. Then there is another point. These very deep mines will take from 5 to 8 years to bring to a producing stage—even if they commence shaft sinking immediately. But are they going to? Are not those who control them afraid to take the plunge? Look at the three mines just mentioned. The South Randfontein Deep was floated in 1895; the Bantjes Deep was floated in 1896. The controllers of these mines had the audacity to float in 1899 the South Village Deep—a still deeper mine—but they have not yet had the pluck to start working on any of them; and this is 1902! Look, too, at the Rand Victoria mines, floated in 1895. I believe it was July, 1899, before work was commenced here. This is a comparatively shallow mine—as mines now go on the Rand—a paltry 4,500 feet deep, and yet the powerful backers of this mine waited for 4 years before commencing work. The Turf Club area is not among the deepest on the Rand, and the reefs have now been located in 2 boreholes. If the firm to which the option to float this ground has been given exercises the option and promptly starts shaft sinking, it ought to set an example that is needed.

If it is to be 6 or 8 years in any case before these mines can produce, why should their controllers waste several years more in the meantime by delaying shaft sinking? It can only mean that they are afraid to face the enormous expenditure. It would be a sounder state of things if, in the meantime, they would refrain from putting the shares on the market. That, however, is perhaps asking too much from human nature. If the gambler exists—and he does by the thousand—one can hardly deny the right of existence to the company promoter. It is a case of a poison and its antidote. The man who to-day buys, as an investment, the shares of these deeper mines buys into a company which is financially in a very uncertain state. He risks the chance of those who control the mine delaying shaft sinking for several years because they cannot make proper financial arrangements, and he accepts the fact that it will be 6 or 8 years before he can begin to receive interest on his investment. Furthermore, he loses all interest on his capital over that period, and he takes the chance of the shaft going down into broken ground or into a poor patch of ore. On the head of all this, the company is a heavily capitalized one, and he is content to buy his shares, not at par, but at a premium of several pounds a share. That is the position of the deeper mines as it appears to me I do not think I have drawn an inaccurate picture.

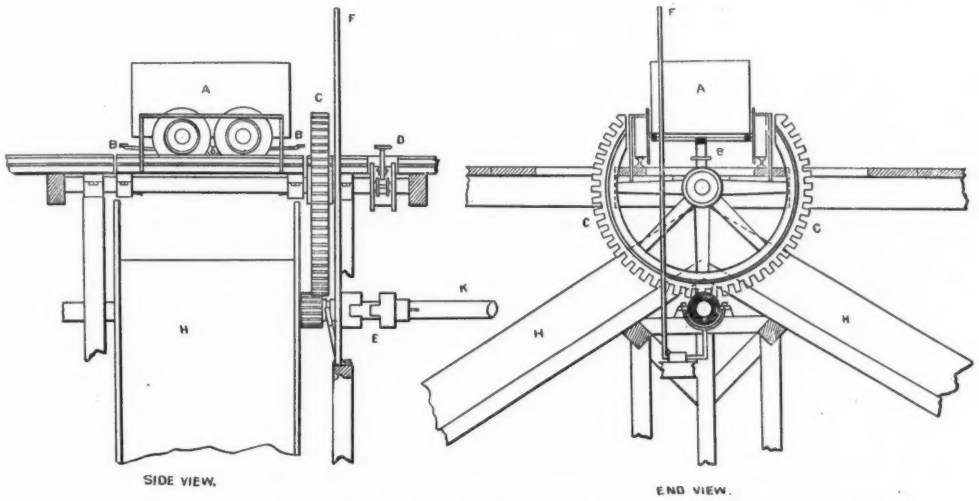

FIG. 5.—CARR COAL DUMPER, HOME-RIVERSIDE MINE.

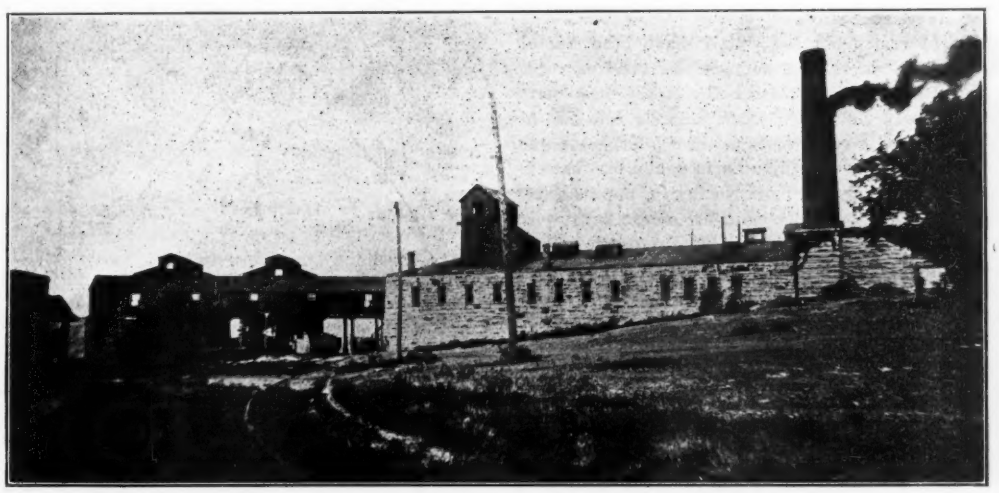

FIG. 6.—STATE COAL MINE, NEAR LEAVENWORTH, KANSAS.

THE MANCHESTER SHIP CANAL.—The London *Colliery Guardian* says: "Considerable developments are promised in the oil-carrying trade of the Manchester Ship Canal. Already the port is visited by a large number of tank steamers and several companies have erected storage tanks in the neighborhood of the Trafford Park estate. It is now stated that a company interested in the Beaumont field is about to erect a tankage with a holding capacity of 2,000,000 gallons."

RECONNAISSANCE OF THE BORAX DEPOSITS OF DEATH VALLEY AND MOHAVE DESERT.*

By MARIUS R. CAMPBELL.

All deposits of borax in the United States, so far as known, are limited in their occurrence to the States of California, Nevada and Oregon. The borax industry has passed through several stages of development since its inception in this country. Originally borax was obtained by evaporating the waters of Clear Lake, about 80 miles north of San Francisco, where it was first produced on a commercial scale in 1864. Subsequently the lake water was enriched by the addition of crystalline biborate of soda, which was collected from the alkaline marsh surrounding the lake. The industry flourished at this and other lakes in California, until in the early seventies borax in large quantity and in a very pure condition was discovered on many of the alkaline marshes of western Nevada and eastern California. Refining plants were established in the vicinity of Columbus, Nev., and at several points in California, the most important of the latter being Searl's Marsh, west of the Slate Range, in the Amargosa Valley, near Resting Spring, and at the mouth of Furnace Creek, in Death Valley. These plants flourished for a time, even though the finished product in many cases had to be transported by teams to the railroad, 100 miles distant. The increased production of borax in this country, together with the importation of large amounts from Italy, so reduced the price that in a few years most of these plants were abandoned.

About 1890 it was found that the borax crust on most of the marshes is a secondary deposit, being derived from the leaching of beds of borate of lime in the tertiary lake sediments that abound in the region. This discovery revolutionized the borax industry, for the bedded deposits are much more extensive, and they are more easily accessible and in a purer condition than the marsh crusts. The marshes were abandoned and a mine established on a bedded deposit at Borate, 12 miles northeast of Daggett, Cal. At the present time this plant, owned by the Pacific Coast Borax Company, is the chief producer of borax and boracic acid in this country.

The mineral found in this mine is colemanite, or borate of lime, which is refined in a large mill located on the western side of the mountain near the Old Calico Mining Camp, and it reaches the market in the form of borate of soda and boracic acid. Similar, though more extensive, deposits of colemanite were found in the Funeral Mountain, on the east side of Death Valley, but the region is so far removed from lines of transportation that the deposits have never been worked. They are held in reserve by this company for future operations.

Since the colemanite does not occur in veins but is bedded with the rest of the strata, which are lake sediments of tertiary age, it seems possible that care-

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ful search may reveal its presence in other localities. For the purpose of locating lake deposits and for studying their contents, the writer made a hasty reconnoissance through the Death Valley region in the spring of 1900. The route, as indicated on the map, extended from San Bernardino on the south, northeast to Pahrump Spring, then west to Owens Lake, and south to the starting point.

Lake sediments were found at a number of points in the Mohave Desert, in Death Valley, and about Owens Lake, but the country was not examined carefully enough to determine the limits of all of these deposits.

The material laid down in these lakes ranges from fine clay to extremely coarse gravel. It generally shows evidence of local derivation, and it was doubtless laid down in comparatively small bodies of water. The climate during the existence of these lakes must have been less arid than it is to-day, else the lakes could not have existed. But at times the supply of water seems to have been less than that carried off by evaporation, and the lakes became dry, and the mineral matter which they held in solution was precipitated, forming the various salts which now characterize these deposits. Since the lakes were presumably strongly alkaline, the waters were probably destitute of animal life, and hence few fossils occur in the beds then deposited. Plant fragments are more abundant, but only a few specimens have been found that are identifiable. From the evidence at present available, it seems probable that lakes existed in some parts of this territory from Eocene (early Tertiary), through the Miocene, and well into the Pliocene periods. The exact sequence cannot be determined, but it seems probable that the oldest lake sediments were laid down previous to the crustal movements that gave rise to so much of the present topography. It also seems probable that the borax beds occur most extensively, if not exclusively, in the oldest sediments.

Beds of this general character have been known for some time at various points along the south side of the Mohave Desert, especially near its western extremity. In these have been found a few marine fossils of Eocene age, consequently it is probable that the beds were laid down in an arm of the sea that extended into this region from the south, but its exact location has not been determined. These beds were seen by the writer in Cajon Pass, just north of San Bernardino. Their outcrop covers only a small area, and they are closely folded with the granite rocks with which they are associated. From the material of which they are composed it is evident that they were derived from the granite which now shows only on the north side of the range. They do not contain debris from the hornblende schists, which seem to make up the mass of the mountain west of Cajon Pass, therefore it seems probable that the beds are older than this mountain and that the original range was made up of the low granite knobs which to-day form the northern foothills of the range.

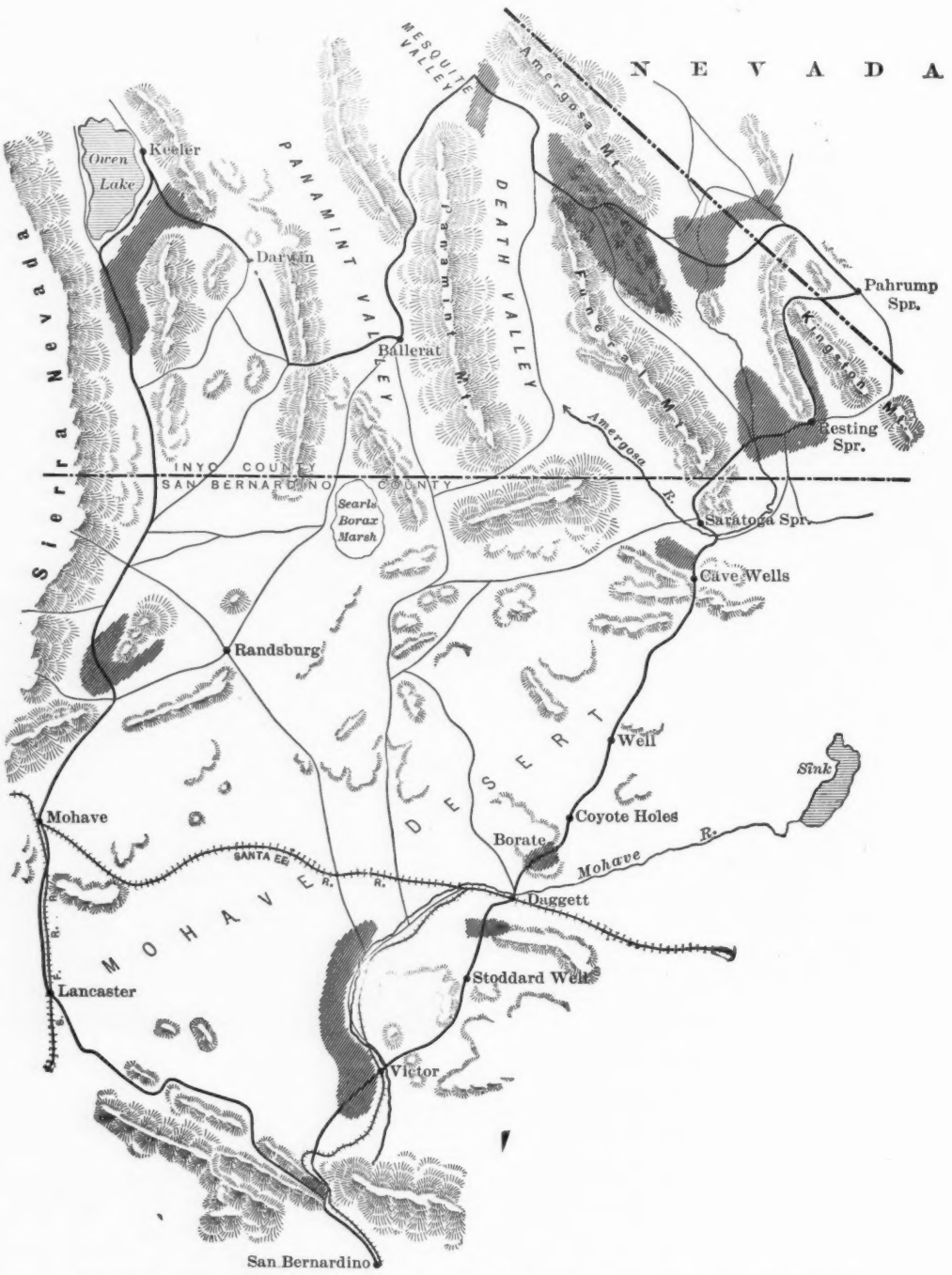
The beds about Daggett resemble those of Cajon Pass, but from their lack of fossil remains and from the large amounts of alkaline material which they contain it seems certain that they were deposited in an enclosed basin or lake. As indicated on the map, the mine is located in a small area of these deposits northeast of Daggett. The beds are composed of clay, sand, gravel and volcanic tuff, with here and there intercalated sheets of lava. The fine sediments contain a large amount of mineral matter, of which gypsum, soda and lime are the most abundant. The beds are folded along east and west lines, and they extend across the mountain in the same direction for a distance of about 8 miles. Similar deposits are reported as occurring west of the Calico Valley, and the statement has been made that the two are probably continuous, but this cannot be the case, since the beds in the vicinity of Borate are replaced by crystalline rocks before they reach the western foot of the mountain, and hence they cannot be continuous under Calico Valley. The bed of colemanite, or borate of lime is not coextensive with the beds with which it is associated. It extends for a distance of perhaps a mile and a half, but it is of workable thickness for only a part of this distance. At the mine it varies in thickness from 6 to 10 feet, and it is present in two parallel beds dipping strongly to the south. There is some doubt about these being separate beds, since the same effect may be produced by close folding. The colemanite rarely occurs in a solid, even bed, but it is made up of large masses which are more or less connected by stringers and bands of the mineral. Considerable lime is associated with the colemanite, and the whole is embedded in a rather soft clay which renders mining rather difficult.

It is probable that these beds antedate the formation of Calico Mountain, since they apparently contain no material derived from that source. They are also metamorphosed to some extent along the contact of the Calico Mountain rocks. From these facts it seems as though the lake sediments were of considerable age; in fact, they may correspond with the Eocene sediments previously described as occurring in the Mohave Desert. They were each laid down during a period of volcanic activity, and they appear to have suffered about the same amount of deformation since they were deposited.

Similar rocks exist southwest of Daggett folded in the same general direction and containing considerable alkaline material. It seems possible that there are small beds of borax in this territory, but none were seen during this examination.

In comparison with these areas of folded sediments, it is interesting to note the level-bedded lake sediments along Mohave River from Oro Grand to Victor. In character these are much like the Daggett beds, except that they are practically horizontal and they contain none of the volcanic material that is so prominent in most of the older series. They have every appearance of being much younger than the beds just described, and it is possible that they correspond with the sediments of Miocene age which were described in the reports of the Fortieth Parallel Survey, or with similar beds described by Mr. Walcott as occurring in the vicinity of Lone Pine, north of Owens Lake, in which fossils of Pliocene age were found. These beds are considerably tilted, evidently having been deposited previous to the elevation of Inyo Range. If lake-forming conditions prevailed until late Pliocene time, it is possible that the Victor beds may be of this age, but at present it is not safe to undertake definite correlations.

The most important, as well as probably the most extensive deposit of lake sediments extends across Funeral Mountain from northwest to southeast. The southern limit of these beds has not been determined, but from reports it seems probable that they have a



BORAX REGIONS OF CALIFORNIA SHOWING DEATH VALLEY AND MOHAVE DESERT.

breadth of from 12 to 15 miles, and since they extend entirely across the mountain, their length is about 30 miles. These beds strike northwest and southeast, and they are tilted to the northeast at an angle of about 30 degrees. Their composition is much the same as the beds previously described, except that in the lower part of the series they contain immense beds of volcanic tuff and sheets of lava.

In the Amargosa Valley two lakes existed since the upheaval of Funeral Mountain, and therefore long after the deposition of the Funeral Mountain beds. One of these lakes occupied the valley in the vicinity of Resting Spring, and a shallow arm extended east and north along the foot of Kingston Mountain. The other lake was in the vicinity of Ash Meadows, but its sediments are not well exposed, and consequently its geographical extent is not known.

A small area of folded Tertiary rocks was seen on the south side of Death Valley, at its southern extremity. These beds do not extend east across the road from Cave Wells to Saratoga Spring, but to the west they appeared to spread out indefinitely, and it seems probable that much of the Owl's Head Mountain is composed of them. No borax was seen at this locality, and none has been reported, but the lake beds are said to contain a deposit of pure rock salt at least 60 feet in thickness.

Death Valley is the lowest surface feature of the United States; its altitude has not been accurately determined, but it is thought to be 480 feet below sea level. It is largely occupied by a great salt field which has a length of about 30 miles and an average width of from 2 to 4 miles. The salt crust is not pure white, like the deposit in the Colorado Desert at Salton, but it is colored by sand and dust blown in from the surrounding region. The salt appears to expand or "heave" as it crystallizes, and consequently it is forced up in the form of pinnacles, which rise above the general surface to a height of about 3 feet, making an extremely rough surface that is crossed with difficulty. The thickness of the salt could not be ascertained, but it averages at least 1 foot of solid salt. A sample collected from the middle of the field shows that its composition is as follows:

Chloride of sodium	94.54%
Chloride of potassium	.31%
Sulphate of soda	3.53%
Sulphate of calcium, hydrous	.79%
Moisture	.14%
Undissolved residue, gypsum, etc	.50%

The northwestern arm of Death Valley, or Mesquite Valley, as it is sometimes called, also contains lake beds which, apparently, are the northwestward extension of the Funeral Mountain deposits. The clays are somewhat alkaline, but no borax deposits were seen. They are exposed for only a short distance being covered further west by sand dunes which occupy the south end of the valley. Only slight traces of lake sediments were seen in the Panamint Valley, but they are well developed in the vicinity of Owens Lake, where they contain much volcanic tuff, and lava flows are abundant. As shown on the map, they cover an extended area southeast of the lake and continue south along the foothills of the Sierra Nevada nearly to Little Owens Lake. Borax is reported as occurring in these beds, but the report could not be verified.

Lake sediments are extensively developed in the vicinity of Redrock Cañon. They are reported as having an extended outcrop in this region, especially in the vicinity of El Paso Peak. In the lower part of the series they are almost wholly composed of volcanic tuffs and intercalated lava flows. In this respect they resemble the Funeral Mountain beds and those which occur about Owens Lake. In El Paso Peak they are reported as carrying a thin bed of coal, in association with which fossil leaves have been found that are of Eocene age. It seems probable that these beds are of the same age as the sediments on the south edge of Mohave Desert, and that they were laid down in the same body of water.

The recent geological history of this region is exceedingly complex, and more work is needed before it can be unravelled and the origin of the borax and associated minerals fully determined.

MANUFACTURE OF SULPHURIC ACID BY THE CATALYTIC PROCESS IN GREAT BRITAIN.—According to the thirty-eighth annual report of the British alkali inspector (February 25, 1902), only one sulphuric acid works in England has so far adopted the catalytic process, but a plant operating under other patents than those of the Badische Anilin and Soda Fabrik has been started in Scotland. The same white acid fume in the escaping gas, familiar in the chamber process, occurs also in the new process, and has led to complaint, but this drawback can probably be overcome. The demand for acid of high strength in Great Britain being limited, the alkali inspector does not look for a rapid extension of the catalytic process in that country.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

SPECIALLY REPORTED.

HYPOTHETICAL QUESTIONS—NEGLIGENCE.—Where in examining a witness concerning the necessary and proper precautions to be taken for the protection of workmen who are being lowered down a mine shaft, it is necessary to ask questions in the nature of hypothetical questions, they may be leading. Where it was customary in lowering men down a mining shaft to lower 5 men at once, with a bucket 3½ feet square, those who could not stand in the bucket standing on the edge and on a crossbar above, and there is testimony that it was customary to stand on such crossbar and no more dangerous than standing on the bucket, the question whether standing on such bar was negligence is for the jury. The mine owner was guilty of negligence in lowering men down in that way without first ascertaining that the shaft was free from obstructions.—Alaska United Gold Mining Company v. Keating (116 *Federal Reporter* 561); United States Circuit Court of Appeals.

WHEN COURT OF EQUITY WILL ENJOIN STRIKING MINERS AND OTHERS.—The power of a court of equity may be invoked to restrain and inhibit by injunction a combination which is formed to induce employes who are not satisfied with the terms of their employment to strike for the purpose of inflicting injury and damage upon the employers. While employees have the right to quit their employment whenever they desire, unless contractual relations exist which should control such right, the action of third parties having no interest in the contracts between the workmen and their employers, in conspiring to control the action of the workmen and to induce them to strike by means of threats, intimidation or a resort to any other modes usually employed in such cases, is an illegal and malicious interference with the employer's business, which a court of equity may properly enjoin where it is necessary to prevent irreparable injury. Where such third persons come from other States, and being served with an injunction, yet hold meetings, near the mines and such meetings disturbed the miners, who were afraid of violence, and that the works would be blown up; that they had no disagreement with their employer, and a large majority of them did not desire to strike, but many said they would quiet work unless they were protected, such action by such third persons was a violation of the injunction, and a contempt of court, and punishable accordingly.—United States v. Haggerty (116 *Federal Reporter* 510); Circuit Court of the United States, District of West Virginia.

ILLINOIS INSPECTION LAW NOT IN VIOLATION OF FOURTEENTH AMENDMENT.—The inspection of coal mines, which is made by Illinois Sessions Laws, 1897, par. 269, section 110, by which coal mines where not more than 5 men are employed at any one time are exempted from the operation of the Illinois act of May 28, 1879, providing for the appointment of State mine inspectors, whose fees shall be paid by the owners of the mine, is not arbitrary or unreasonable. Also, the discretion permitted to State mine inspectors by Illinois act of May 28, 1879, section 11d, as amended in 1879, to determine the number of times each mine shall be inspected and to regulate the charges for the same, does not make the act repugnant to the Fourteenth Amendment of the Constitution of the United States, where it requires that at least 4 inspections annually shall be made by each inspector of each mine in his district, and that his fees shall be dependent upon the length of time consumed and the expense necessarily incurred, and the fee of each inspector shall not be less than $6 nor more than $10, and provides a regular salary for the inspector, which is neither increased nor diminished by the number of inspections or the amount paid for the same.—Consolidated Coal Company v. People of Illinois (*22 Supreme Court Reporter,* 616); Supreme Court of the United States.

WHEN REPRESENTATIONS WILL NOT BE HELD FRAUDELENT.—(1) Where a purchaser of mining property alleged fraud in the vendor's representations that he was the owner of a certain number of inches of water in a creek and had made a valid and indefensible location of same, but it appeared that immediately after the purchase the purchaser relocated the water claimed by the seller—its notice reciting that the same had been sold to the purchaser—it was apparent that the latter knew the interest of the former, and hence was not misled. (2) Purchaser alleged fraud in sale by falsely representing that the land would yield gold not less than 10 cents per yard "from the grass roots down" and that he had prospected it and knew the value of same. (3) Where it was alleged that the vendor was guilty of fraud in representing that a certain ditch could be constructed for a certain sum, and that after the sale the seller undertook to construct the ditch for the amount which it had been represented it could be done for and failed, but there was no showing that the seller had not entered on the work without the intention of completing it, or knew that it could not be done for the price named, it was not made to appear that such statement as to the cost of the ditch was made with knowledge of its falsity. Held, that as the expression "from the grass roots down" ordinarily means to the center of the earth and not merely to bed-rock, and as "prospected" ordinarily means to do experimental work to ascertain the probable value of a mining claim, and not to accurately ascertain the actual value by sinking holes to bed-rock and testing the earth, the alleged misrepresentations were mere expressions of opinion, and not made as statements of fact. Where the law requires that courts shall take judicial notice of the meaning of English words and phrases and legal expressions, such notice will be taken only of the ordinary meaning of current words and phrases and if an unusual meaning is sought to be attached to the words used in the pleadings, such meanings must be explained.—Martin v. Eagle Creek Development Company (69 *Pacific Reporter,* 216); Supreme Court of Oregon.

ABSTRACTS OF OFFICIAL REPORTS.

Broken Hill Proprietary Company, New South Wales.

The latest report of this company covers the half-year ending May 31, 1902. The directors' report says: "The experiments, which have for some considerable time been carried on at the Port Pirie works in regard to the Huntington-Heberlein roasting process, have now been brought to a close. These trials, extending over a long period and dealing with a large quantity of ore, have proved the success of the process as applied to the company's operations.

As a consequence and upon the strong recommendation of the general manager, your directors have decided to adopt the same, and an agreement has been entered into whereby the company have the right of user at any of their works. The modification of the roasting furnaces, necessitated by the introduction of the process, is now being proceeded with, and should be completed prior to the close of the current half-year. . . .

"It is unfortunate that the tariff introduced by the Federal Legislature should press so heavily upon the mining industry generally, and especially so under existing circumstances. Particularly is this the case with regard to timber, in which instance the amended duty is 6d. per 100 superficial feet on the large timber, and 1s. 6d. per 100 superficial feet on smaller sizes. In the case of the larger timber it amounts to 16½ per cent, and in the other sizes 50 per cent duty on the f. o. b. value of the Oregon, and, inasmuch as 47 per cent of the timber requirements are of the smaller dimensions, this becomes a very serious item.

No other timber is suitable for Barrier requirements, owing to conditions which prevail there and do not obtain in other districts, so that the tax in question is practically one which, so far as mining is concerned, will only be collected from the Broken Hill mines, and it is difficult to conceive that any legislature could intend to penalize a particular district and an industry employing such a large amount of labor.

"The gross profit for the half-year amounts to £68,236, which, after deducting £20,295 for depreciation upon the various plants, leaves a net profit of £47,941. The sum of £6,179 has been expended in construction, and of this amount £3,216 has been in connection with the new sintering plant at Broken Hill, leaving but a small sum expended over the whole of the other plant. One dividend of 1s. per share, or £48,000 in all, has been distributed amongst the shareholders. The result of the half-year's working has been considerably affected by the continued depression in the prices of the metals and the shrinkage of silver values has been most unfortunate."

The general manager's report says that work at the open-cuts during the half-year under review has continued very regularly. From Block 11 open-cut, situated at the southern end of the company's property, considerable quantities of sulphide, as well as oxidized ore, were extracted. These workings are now down to the 300-foot level. Wigg's quarry (Block 12) has produced smelting ore of very fair grade. Instead of removing batter material in large quantities, so as to free the ore, the batter material is now quarried in only such quantities as are required for filling the stopes underground, thus gradually freeing the ore and making it available for extraction as may be necessary. Any shortage in oxidized ore caused through this will be made up by greater activity underground.

The quantities of ore and waste removed by the open-cut operations during the six months were as follows Ore, 50,852 tons; waste, 66,737 cubic yards.

The principal features in relation to the underground operations have been the connecting of the 650-foot level with Delprat Shaft and the istallation of the electric haulage system in that level. Stoping in this level is now proceeding regularly, and the various faces show very good ore. The opening up of the 800-foot level is being actively pushed. The quantities of ore raised during the half-year from underground have been: Sulphide, 255.733 tons; oxidized, 2,293 tons; total, 258,026 tons, which is 15,931 in excess of the previous six months. The ore won has been disposed of as follows: Port Pirie smelters, 44,804 tons; concentrating plant, 264,074 tons; total, 308.878 tons.

The quantity of sulphide ore dealt with by the mills shows a further increased tonnage over the previous half-year, and the mills continued to do very good work under the additional pressure. The high recovery of metals was maintained, and a small saving effected in the working costs. Several slight modifications were made in the plant, and other improvements are contemplated, so as to still further improve results and effect economies in treatment.

Several trials have been made with a machine of a new type, but, generally, the results obtained so far from the existing machines have not been sufficiently satisfactory to justify the expenditure of the large sum of money necessary to put up a working plant.

The operations at these plants have been suspended during the half-year, as no ore of a character suitable for this treatment has been available, but from the cleaning up of the floors, etc., 25,475 ounces of silver were obtained, and a further substantial quantity is expected.

A site was selected outside of the Hill to carry on sintering, and about 13,000 tons of slimes have passed through the process. The product is being sent down to the smelters as required for treatment.

At Port Pirie there are now 8 furnaces of the modified type. One of the smelters has been converted into a circular furnace, which has now been blown in and is under trial. The lead and silver recovery from it so far is particularly satifactory. The use of a uniform quality of iron flux supplied from the Iron Knob quarries has greatly facilitated work in this department. The following table shows the quantities of ore treated:

	Tons treated.	Percentage of total.
Kaolin and siliceous ore	33,217	31.78
Sulphide ore	47	0.05
Flux iron	11,450	10.96
Sulphide concentrates	23,623	22.60
Briquettes	36,179	34.61
Total	104,516	100.00

The average extraction per ton of ore treated was: Lead, 18.81 units; silver, 18.71 ounces. This is slightly lower than the previous half-year, for, although the precentage of recovery was slightly higher, the crude ore treated was poorer in metals. In addition to the foregoing, there were also treated at the smelters: Fluedust, 1,351 tons; raw matte, 375 tons; leaching products, 81 tons; refinery drosses, 3,090 tons; producing, lead, 2,436 tons; silver, 275,013 ounces; gold, 10 ounces. Thus making the total quantity passed through the furnaces 109,413 tons. The roasting plant dealt with the following quantities: Concentrates and slimes, 51,192 tons; smelting ore (mixed with these concentrates), 600 tons; cooling floor pickings, 55 tons; total, 51,847 tons.

Exhaustive experiments were made with the new system of roasting concentrates, and, as the result of trials extending over 12,000 tons, it was decided to adopt this system. In order to do this, some modifications will be required in the roasting furnaces, and these will be introduced gradually, so as not to interfere with the regular work. The features of this new roasting system are, that the roasting concentrates are delivered in a lumpy condition which is well suited for the smelting furnaces, that it does away with the necessity of briquetting, and that, generally, it gives better results. The plant required in connection with these modifications is under construction.

No work has been done in the reverberatory copper furnace, as the roasters were not available for matte, but were running continuously on concentrates.

The refinery dealt with 19,810 tons at a slightly reduced cost over the previous half-year. No alterations were made in the plant in this department. The doré parting plant did its work satisfactorily, and treated 70,546 ounces of doré silver, producing 1,207 ounces of gold. The following figures show the production from the various plants:

Plant.	Gold. Ozs.	Silver. Ozs.	Lead. Tons.	Copper. Tons.
Port Pirie Smelters:				
In bullion	1,325	1,943,859	19.666	..
In matte	....	11,297	.....	13
Leaching Plant:				
In bullion	10	25,475	29	..
Total	1,335	1,986,631	19.695	13

The refinery and parting plants treated 19,810 tons of silver-lead bullion, producing: Silver (fine), 2,108,348 ounces; gold (fine), 1,207 ounces; lead, 19,286 tons; antimonial lead, 176 tons.

The quantity of concentrates was again in excess of what the treatment plant could deal with, and several parcels of concentrates were sold, bringing up the total output of lead and silver to 32,289 tons lead and 2,554,160 ounces silver. This is the largest half-yearly output of lead on record.

During the half-year there were regular supplies of iron ore from the Iron Knob quarries, and the tramway proved to be quite sufficient for the work. The flux from these quarries showed a very uniform grade throughout.

The severe drought experienced in New South Wales interfered with our regular work at the coke works, as insufficient water was available for quenching the coke, and for several weeks production was short of the normal quantity. Arrangements have now been made to obtain a plentiful supply of water from the South Bulli Colliery, and no further uneasiness is felt on this score. An additional 10 ovens are under construction of the same design as the former 50, which are giving every satisfaction.

BOOKS RECEIVED.

In sending books for notices, will publishers, for their own sake and for that of book buyers, give the retail prices. These notices do not supersede review in a subsequent issue of the Engineering and Mining Journal.

Mechanics—Problems for Engineering Students. By Prof. Frank R. Sanborn. New York; *Engineering News* Publishing Company. Pages, 156; illustrated. Price, $1.50.

The Phosphate Rocks of Arkansas. By Dr. John C. Branner and Dr. John F. Newsom. Fayetteville, Ark.; published by the Arkansas Agricultural Experiment Station. Pages, 64; illustrated.

The Journal of the Iron and Steel Institute. Volume LXI. Part I. 1902. Edited by Bennett H. Brough, Secretary. Published for the Institute in Londan by E. & F. N. Spon, Limited. New York; Spon & Chamberlain. Pages, 738; illustrated.

Japan. Report of the Director of the Imperial Mint, Osaka, for the Year Ending the 31st of the Third Month of the 35th Year of Meiji (March 31, 1902). T. Hasegawa, Director. Tokyo, Japan; printed by the Insetsu Kyoku. Pages, 40.

New South Wales Statistical Register, 1901. *Part VI. Land Settlement.* Pages, 24. *Part VII. Education, Science and Art.* Pages, 44. *Part VIII. Law and Crime.* Pages 114. *Part IX. Population and Vital Statistics.* Pages, 30. T. A. Coghlan, Government Statistician. Sydney, N. S. W.; Government Printer.

Results of a Census of New South Wales Taken March 31, 1901. Part II. Education of the People. T. A. Coghlan, Government Statistician. Sydney, N. S. W.; Government Printer. Pages, 230.

Tasmania, Geological Report. Gold and Coal at Port Cygnet. Pages 8. *Opal at Bothwell.* Pages 8. *Discoveries of Copper Ore Near Point Hibbs.* Pages, 8. *Deep Sinking at the Moonlight-Cum-Wonder Gold Mine.* Pages, 12; illustrated. W. H. Twelvetrees, Government Geologist. Hobart, Tasmania; Government Printer.

BOOKS REVIEWED.

Iowa Geological Survey. Volume XII. Annual Report for 1901. Dr. Samuel Calvin, State Geologist; A. G. Leonard, Assistant State Geologist. Des Moines, Iowa; published by the Survey. Pages, 512; illustrated.

This volume is an acceptable addition to the excellent series of reports issued by the Iowa Geological Survey. After completing its preliminary work the Survey undertook a systematic examination of the State by counties, in which considerable progress has now been made. The results of this work are given in a series of monographs, which are published as they are completed. The present volume contains the administrative report of State Geologist Samuel Calvin, showing the work accomplished dur-

ing 1901, and that laid out for the current year; with other particulars of interest. This is followed by the other yearly reports of the Survey, including one on the mineral production of the State in 1901, prepared by S. W. Beyer.

The remainder of the volume is taken up by five of the monographs, above referred to, on counties of the State. Those given are on Webster County, by Frank A. Wilder; Henry County, by T. E. Savage; Cherokee and Buena Vista Counties, by Thomas H. Macbride; Jefferson County, by J. A. Udden, and Wapello County by A. G. Leonard. These monographs are illustrated by maps, geological sections, and a number of reproductions of photographs showing topography, nature of deposits; etc. The work on these is excellent and a number of them are good examples of the use which can be made of illustrations of this kind. The reports show careful work.

Iowa is generally regarded as an agricultural rather than a mining State, yet its mineral resources are of much value. The total production in 1901 was valued at $12,204,160, of which coal contributed $8,051,806; clay, $2,774,200; building stone, $781,756; gypsum, $562,500; lead and zinc, $16,500; and iron ore—the mining of which has only just begun—$4,876. Coal, clays, gypsum and other building materials, which exist in great varietv. will doubtless continue to be the chief items of Iowa production. The Survey is doing very good work in assisting the producers.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
Letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

The Concordia Colliery in Germany.

SIR: On page 793, in your issue of June 7, you printed a short notice saying that the Concordia Gesellschaft had decided to put in a mechanical coal-sorting plant at its collieries in "the Siegen District of Germany." Permit me to correct your statement. The Siegen District has no collieries at all, though it has iron ore mines. The coal used in that district is brought from the Ruhr coal belt in Westphalia, at a distance of 100 kilometers. The collieries of the Concordia Company are located in the Ruhr District, above mentioned, being in the western part of that coal belt, near the important manufacturing town of Oberhausen.

I trust that you will be pleased to receive this correction, as it shows that your esteemed journal is read with care in all parts of the world.

ALBRECHT MACCO,
Berlin, Germany. Königl. Bergassessor.

Assay of Copper Slags.

Sir: About the beginning of the present year a large number of samples of copper slag were sent out from this laboratory. The general sample had been carefully ground and thoroughly mixed so that each lot represented the whole. They were pretty generally distributed over the United States, Canada, and Mexico with a few to European countries. Its copper content was rather under the average and in studying the results received it is noted that the cyanide and iodide methods give, generally, too low a result. The colorimetric and electrolytic are better, but not in all cases where used. With a view to securing more accurate and concordant results the following is submitted.

In the battery assay, however conducted, it is absolutely necessary that the cathode be weighed as soon as cool. Results even as much as 0.1 per cent too high have frequently been obtained in this laboratory by repeated weighings at intervals of a few minutes. While this may be due in part or in whole to the condensation of moisture on the surface of the cathode it is reasonable to suppose that the same conditions as to atmospheric humidity are found in many other localities. This vicinity has the heaviest rainfall in the United States.

The slag in question contained a considerable amount of iron. In precipitating the copper on aluminum it is to be noted that the aluminum must reduce a large amount of this iron before the copper begins to appear on the aluminum. If the completion of the precipitation of the copper is confirmed by the eye alone a considerable error is apt to creep in. On the other hand if the precipitation should be complete, washing by hot water will always dissolve some copper and the loss is greater as the washing is prolonged. Whatever method of final estimation is used these small losses will badly affect the result.

In the use of the color method no account seems to be taken of the fact that copper is retained by the silica and iron hydrate. Several articles have appeared on this method but the fact that good and satisfactory results have been obtained by the individual is no proof that equally as good results can be obtained on an ore or slag radically different in composition. An instance illustrating this point recently occurred in this laboratory. The copper standards are made up for a normal slag containing about 35 per cent of iron. In concentrating a low matte the iron in the slag was brought up to over 50. The copper was determined as usual by color, and when time permitted was checked by the battery method. These results were from two to three tenths higher than those obtained by the color method.

Now as to the remedies for the above mentioned difficulties. Whether or no materially higher results can be obtained in the battery assay by repeated weighings at intervals can be easily determined by the individual. The experiment should be conducted under varying atmospheric conditions. A few words as to preliminary treatment may not be out of place. It is not, of course, adapted to the most rapid work. More satisfactory and cleaner work can be done by weighing out 2 grams in a platinum dish, adding dilute hydrofluoric acid and slowly followed by nitric acid, and rapidly rotating the dish until action has ceased. The rotation prevents any loss. Now place on the hot plate and evaporate to complete dryness, with or without sulphuric acid as may be the custom of the analyst. When dry the mass can be readily dissolved, washed out of the dish, and placed on the battery in its appropriate solvent. There is thus no danger of the silica occluding the copper. This treatment can easily be adapted to any of the other methods of estimating copper where great speed is not necessary.

In precipitating copper on zinc or aluminum if, when the deposition is apparently complete, 10 or 15 cubic centimeters of hydrogen sulphide water be added no doubt will exist. Again, in washing the metallic copper if the wash contain a little of the hydrogen sulphide solution no loss by oxidation will occur. It is of course assumed that measured quantities of nitric acid and ammonia will be used if the cyanide method of titration is adopted. Another fact not mentioned generally in text-books is that the titration by cyanide be done slowly, giving plenty of time for the disappearance of the blue color as the reaction approaches completion. But the chief obstacle probably exists in incomplete separation on aluminum or zinc, as the case may be, with a further loss in washing by water alone. Any effort to completely precipitate much copper on aluminum in 6 or 7 minutes will fail in the presence of a large quantity of iron.

The following method of procedure should correct any discrepancies occurring in the colorimetric method. Each individual laboratory should work out its own factors as adapted to its slag or whatever material is under analysis. Four tenths of a gram of copper is dissolved in a few cubic centimeters of nitric acid and boiled until free from nitrous fumes. The solution is cooled and made up to 2,000 cubic centimeters. This is the stock solution and will last for a long time. One cubic centimeter will contain 0.0002 gram of copper, or be equal to 0.02 per cent. Select a slag low in copper, the lower the better, and make a very careful determination of the copper content, preferably using the battery method. We will suppose that the slag contains 0.29 per cent. Now weigh out 2 grams of this slag in a suitable casserole or beaker and add 0.5 cubic centimeter of the stock solution thus giving a slag containing exactly 0.30 per cent of copper. To another 2 gram portion add 5.5 cubic centimeters of the stock solution thus giving a slag of 0.40 per cent. Continue this adding of the equivalent of 0.10 per cent until the maximum desired is secured. Now treat the several portions as follows: add a few cubic centimeters of water, cover and bring to a boil. Then add 15 cubic centimeters of nitric acid and boil down rapidly to a pasty mass. Remove from the plate, add about 50 cubic centimeters of water and an additional 5 cubic centimeters of nitric acid. Stir well and add a liberal excess of ammonia. Again stir and pour all on 15 centimeter filter paper, allowing the filtrate to run into a 200 cubic centimeter volumetric flask. Allow to drain well and wash the mass back into the solution dish, add more ammonia and after thorough stirring pour again on the filter, washing the dish out thoroughly. Now wash the precipitated iron and silica thoroughly on the filter until the filtrate is up to the mark. For this washing a needless waste of time and energy can be saved by placing a shelf about 5 feet over the work and placing thereon an 8 or 10-liter bottle. A syphon terminating in a jet and closing by a pinch-cock will do the work more rapidly and satisfactorily than an ordinary wash-bottle. It can also be applied in many other ways. Having washed out the flask to the mark remove and shake well. Now select a dozen, more or less, common 100 cubic centimeter Nessler jars or tubes of the same diameter, thickness of glass, and height of graduation mark. Into one of these tubes, which to prevent confusion should be marked, place 10 cubic centimeters of ammonia and fill nearly to the mark with water. To another jar add of the filtrate from the known 0.30 per cent slag to the mark on the jar. This represents 1 gram of the slag. Cover a pane of a window with white paper and set this latter tube against it. Now from a burette add somewhat less than the equivalent of 0.30 per cent of the stock solution to the first jar containing the ammonia and water. Shake well and compare with the jar in the window. Continue adding the stock solution until the colors match exactly or at least match as regards intensity when viewed laterally. Record the number of cubic centimeters of the stock solution required and proceed in the same manner with the higher percentages. For standards lower than the point from which the determination was begun it will be necessary to remove the copper from the slag by the battery or other means and to the resulting copper-free solution add the stock solution equivalent to the amount desired. There is nothing to prevent working between 0.10 per cent if desired. Having established this set of standards future determinations will be very simple, providing the constitution of the material and method of washing is the same. Of course a slight variation in the various constituents existing in the material will not materially affect the results. In making up fresh standards it is only necessary to add the found and recorded number of cubic centimeters of the stock solution to the respective cylinders. As to the choice of jars the above mentioned are chosen because they are cheap and give as good results as the costliest of glass-stoppered. This laboratory has a rectangular box open in front and with a sheet of white paper at the back. Both front and back have hinged covers. The standards properly numbered are placed in this box with space between each for

the insertion of a cylinder containing the assay. The box is placed on a shelf in front of a window. Every 10 days the cylinders are removed from the box, washed, and refilled from the stock bottle. The tops are, of course, covered, but not necessarily tight or sealed. This method has been in use here for years and has always checked with the battery except as before noted. It is more accurate than any other method except the battery, if the copper is not above 1 per cent or below 0.2. It does not produce slop results as is credited to the colormetric method generally in a recent number of the JOURNAL. It is presented in the hopes that the colorimetric method will secure a better recognition and the place it deserves.

THORN SMITH,

Chemist Ducktown Sulphur Copper and Iron Company, Ltd.

Isabella, Tenn., Sept. 30, 1902.

QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert, nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.

The Cyanide Process.—Will you kindly answer through your columns: What is the average cost per ton of ore for cyaniding? What is the most approved, or best appointed cyanide plant in the United States? Is the process much used in Mexico or other countries? Is there in publication a book exactly describing the various operations in sequence, and the cost of material used in the cyanide process, as it is considered the most approved method? What countries would you consider it desirable to obtain patents for a very rapid method of extracting gold and silver from a cyanide solution, a process that would not require any change at all in the plant? Would a rapid method for the recovery of the gold and silver more than compensate for the loss of the entire cyanide solution from which the metals are recovered, or would the cyanide solution necessarily have to be used over again in order to make it a payable proposition?—G. A. B.

Answer.—One of our correspondents communicates the following memoranda with respect to the above inquiries to which we replied in our issue of October 4:

The average cost of cyaniding could hardly be arrived at by anything less than a regular census investigation; perhaps it has been done in the report of the Twelfth Census on Gold and Silver. However, the result would not be of much value, anyway, because of the wide range of variation in different mills, according to the ore, the size and arrangement of the mill and the way it is run, besides other conditions.

At Mercur, Utah, in a mill of 350 tons per diem capacity, the cost per ton has been only about 70 cents, but the Mercur ore is notoriously an easy one. In treating the more difficult ore from Cripple Creek, Colo., the cost has been as low as $3.00 per ton. These figures refer to the treatment of crude ore involving crushing, which is the more expensive the finer it has to be. Tailings from stamp mills are frequently cyanided at a very low cost.

Mr. G. T. Beilby's estimate of the production of gold by the cyanide process in 1897 will give inventors a proper idea of the countries in which an improvement might advisedly be patented. He computed that Africa (meaning chiefly the Transvaal) produced 825,000 ounces of bullion; Australia (the colonies of which are now fortunately consolidated into one commonwealth), 308,000; New Zealand, 263,000; the United States, 190,000; British India, 18,800; Mexico, 10,200; and other countries, 5,000; total, 1,620,000, equivalent to 1,215,000 ounces of fine gold. The application of the cyanide process in Mexico is increasing and a valuable improvement ought certainly to be patented in that country, although the cost of a Mexican patent is comparatively high ($150).

As to the inquiry if a rapid method of recovering gold and silver from the solution would compensate for the loss of the entire solution, the answer is probably not; certainly not unless the solution were extremely dilute. With ordinary solutions, containing 2 to 10 pounds of cyanide per ton it would be out of the question.

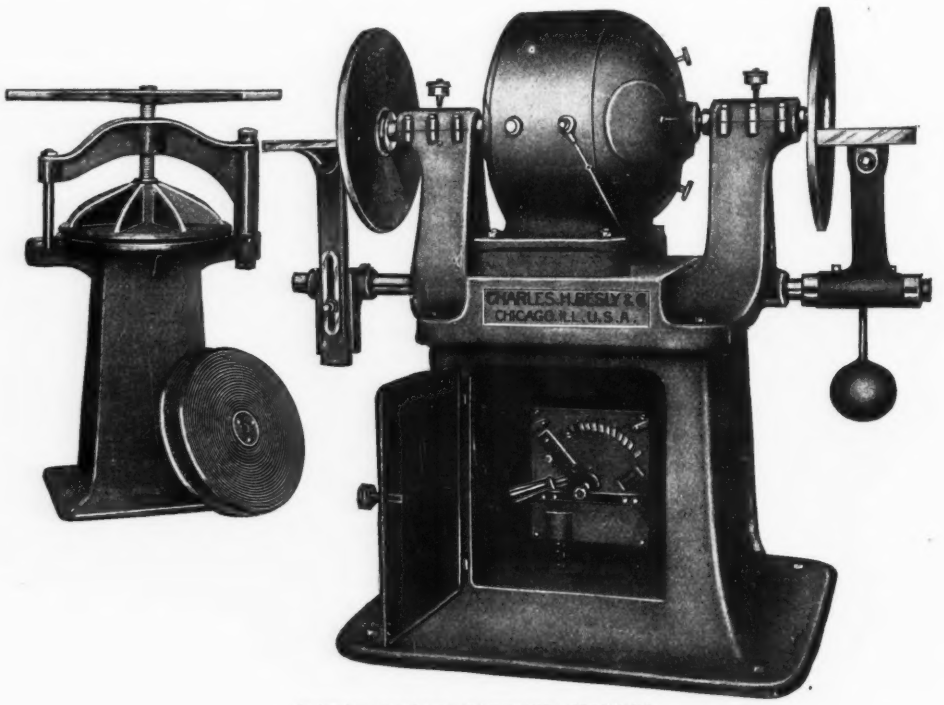
The common method of precipitation by zinc shavings or dust is a cheap, rapid and in all respects highly efficient process which leaves little to be desired. It used to be thought that electrical precipitation might be employed advantageously for solutions up to a strength of 0.1 per cent KCy. Mr. Philip Argall stated in *The Mineral Industry*, Volume VI, that zinc precipitation "has stood the test of time, and for solutions running from 0.05 per cent KCy upward, and low in gold, zinc is likely to continue for a considerable time to come the best precipitant of gold from cyanide solutions. To this strength at least, electrical methods have a fair field; for solutions carrying over 0.1 per cent KCy I cannot see the slightest chance for electrical precipitation to compete with zinc." In *The Mineral Industry*, Volume X., he added that the results of further tests on a large scale demonstrated that zinc precipitation could at least hold its own against electrical precipitation for any strength of solution and later when the improved process was in daily use, sundry modifications in details raised the results considerably beyond expections.

Complete records of the treatment of 150,000 tons of solution, reported by Mr. Argall, in a period of 17 months, during which the average assay of the solution entering the precipitators was 0.068 ounce Au and of that leaving them 0.005 Au (a precipitation of 92.6 per cent) the average strength of the solutions in cyanide being 0.031 per cent (0.62 pound per ton), showed that the actual expense of treating one ton of solution and marketing the bullion was only 1.5 cents, or 23.84 cents per ounce of bullion recovered. Under certain conditions the cost could be reduced to 1.25 cents, and even 1 cent per ton of solution. "There is nothing exceptional about these results," says Mr. Argall; "they represent what can be done with zinc in ordinary working, and indicate the conditions against which electrical precipitation must compete."

Mr. Argall's papers in *The Mineral Industry*, Volumes VI and X may be read with profit by all who are interested in the precipitation of gold from cyanide solutions. The remarkably low costs which he has attained in practice on a large scale suggests that if there is anything in the recovery of gold from sea-water, which recently engaged the attention of many persons in New England, his methods might be applicable to that problem.

A MOTOR-DRIVEN GRINDER.

We illustrate herewith a motor-driven Gardner grinder manufactured by Charles H. Besly & Co., of Chicago, Ill. The grinder shown was furnished to the new United States Mint at Philadelphia, Pa., and is driven by a 5-horse power Crocker-Wheeler motor. The makers, however, are prepared to furnish this grinder to be driven by any of the well known makes of motors. The Allis-Chalmers Company, of Milwaukee, Wis., has two motor-grinders similar to the one shown in the illustration, driven by 6 horse-power Milwaukee electric motors. We may add that many shops are operating Gardner grinders belted from a line shaft which is driven by motors.



MOTOR DRIVEN GARDNER GRINDER.

The complete equipment of the No. 40 motor-driven Gardner disk grinder consists of the machine, with floor setting up press, 4 18-inch spiral grooved steel disks, glue pot, "helmet" cement, "helmet" oil, necessary wrenches and accessories, besides complete assortment of emery paper and cloth circles; also complete assortment of spiral emery paper circles.

PATENTS RELATING TO MINING AND METALLURGY

UNITED STATES.

The following is a list of patents relating to mining and metallurgy and kindred subjects, issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the ENGINEERING AND MINING JOURNAL upon receipt of 25 cents.

Week Ending September 30, 1902.

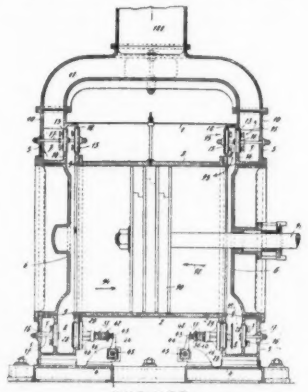
709,861. CUTTER-HEAD FOR HYDRAULIC DREDGERS.—Lindon W. Bates, Chicago, Ill. In combination with a suction-pipe, a substantially vertically disposed cutter-head revolubly attached to the lower end thereof; knives carried by said head; and a unitary means for imparting power directly to said head, alike at both ends.

709,867. PROCESS OF MANUFACTURING NITROGEN COMPOUNDS FROM ATMOSPHERIC NITROGEN.—Charles S. Bradley and Dimmitt R. Lovejoy, New York, N. Y., assignors, by mesne assignments, to Atmospheric Products Company, Niagara Falls, N. Y. A process of producing compounds of nitrogen and oxygen, consisting

in exposing to the action of an electric arc, a mixture of nitrogen and oxygen and forcing the said mixture through the space containing the arc of minimum volume in sufficient volume and with sufficient rapidity of renewal, to carry away the nitrous products from the arc and substantially prevent disassociation.

709,896. FUME-ARRESTER.—Andrew W. Gilliland, St. Louis, Mo. A fume-arrester, comprising a chamber divided into compartments by transverse partitions, and openings in said partitions at alternately opposite ends and near the floor-level only.

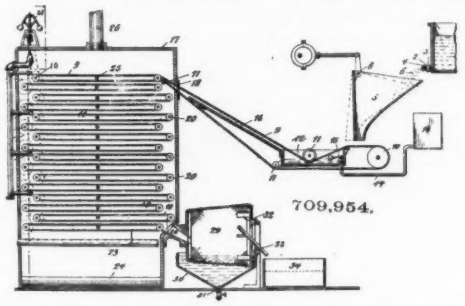
709,929. BLOWING-ENGINE.—August Raven, Jemeppe, Belgium. In a blowing-engine in combination with the cylinder and the piston, automatic inlet and outlet valves, supplementary automatic inlet-valves at each end of the



709,929.

cylinder, levers adapted to act upon the said supplementary valves, two shafts carrying said levers, a crank at the end of each shaft, tappets mounted on rocking levers connected to said cranks, a shaft rotating at a speed proportional or equal to the working speed of the engine, a sleeve rotating with said shaft but adapted to be displaced longitudinally upon said shaft, cams on said sleeve, adapted to engage the tappets, and an air-governor acting to regulate the value of the portion of the compression stroke during which the cams must be in engagement with the tappets.

709,954. APPARATUS FOR PRODUCING WHITE LEAD.—John W. Bailey, Jersey City, N. J., assignor to the General Lead Company. An apparatus for making

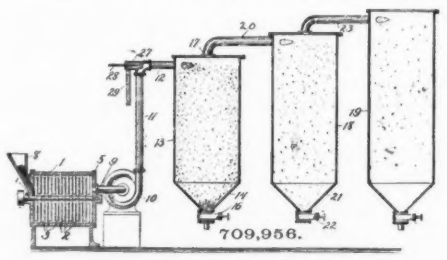


709,954.

white lead or similar products, the combination with a corroding chamber, of a belt adapted to carry the comminuted lead into the corroding chamber, means for supporting and moving the belt and means for supplying a suitable corroding-gas to the chamber.

709,955. METHOD OF PRODUCING LEAD CARBONATE.—John W. Bailey, Jersey City. N. J., assignor to the Union Lead and Oil Company. A method of producing lead carbonate which consists in so comminuting metallic lead that it may be maintained in an uncompacted condition, conveying the lead in this condition without substantial disturbance into a corroding chamber, causing it to move through said chamber without substantial disturbance and subjecting it therein to the action of a suitable corroding-gas whereby compacting of the comminuted lead is avoided and the uniform attack of the corroding agent is facilitated.

709,956. APPARATUS FOR PRODUCING WHITE LEAD.—John W. Bailey, Jersey City, N. J., assignor to Union Lead and Oil Company. An apparatus for producing



709,956.

lead carbonate comprising a corroding chamber, means for introducing suitable corroding gases into said chamber, and means for diffusing powdered lead in said chamber.

709,957. METHOD OF PRODUCING WHITE LEAD.—John W. Bailey, Jersey City, N. J., assignor to Union Lead and Oil Company. A method of producing lead carbonate, which consists in subjecting lead in the form of an impalpable powder to the action of a suitable corroding gas.

709,958. ROLLING METAL TUBES OR OTHER HOLLOW OR SOLID BODIES.—Arthur E. Beck, Earlswood, England, assignor to Perrins, Limited, Warrington, England. A pair of gapped, pilger, or back-action rolls having eccentrically-grooved projecting or working portions, the eccentricity of one roll being different from that of the companion roll.

709,971. ELECTROLYTIC DECOMPOSITION OF ALKALINE SALTS.—Edwin Edser and Meyer Wildermann, London, England. In the electrolytic decomposition of alkaline salts, a process of increasing the speed with which alkaline metal existing as amalgam combines with water which consists in applying to pieces of carbon a conductive material independent of the amalgam, and then placing of said carbone pieces in contact with the amalgam.

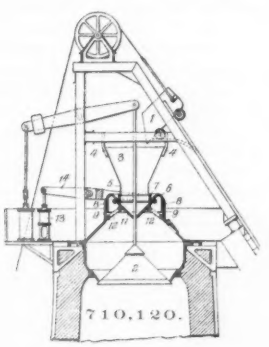
709,972. ROLLING MILL.—Victor E. Edwards, Worcester, Mass. The combination of a continuous rolling mill comprising a plurality of sets of rolls, driving connections, and means for coupling the rolls with different members of the driving connections, so that successive sets of rolls may be driven at different relative speed ratios to adapt the rolling mill to the production of different products.

709,982. APPARATUS FOR SEPARATING MAGNETIC AND NON-MAGNETIC MATERIALS FROM ONE ANOTHER.—Josef W. R. T. Heberle, Sala, Sweden. The combination of an endless belt traveling over pulleys in such a manner that one of its free sides moves downward vertically, a system of magnets inside said belt, a tank in which said belts and magnets are immersed, a vertical partition between the downward-moving part of the belt and the wall of said tank, another partition extending from the bottom of the tank and the lower pulley close to the same, and inlets and outlets for the water from said tank.

710,030. PUMP.—Charles C. Worthington, Dunnfield, N. J.—A direct-acting steam pump having seperate chambers for the opposite ends of the pump, a cross-head between said chambers with the plungers for the opposite pump ends on opposite sides of the cross-head, connections from the steam piston or pistons to said cross-head, and compensating mechanism connected to said cross-head.

710,054. DREDGER AND EXCAVATOR.—Isaac B. Hammond, Portland, Oreg. The combination with the dredge-ladder and the tumblers for the dredge-chain, of an endless dredge-chain and buckets; traveling carriers therefor, attached below the chain and narrowed toward the base, so that the carriers in width occupy only a portion of the space within the span of the buckets, a railed way extending the length of the upper surface of the ladder leading from and to the tumblers; a railed way extending from the upper tumbler along the under surface of the ladder for a part of its length, being disconnected at a convenient point, allowing enough of the dredge-chain and buckets at the lower end of the ladder to hang free, to provide sufficient drag; and a guard for holding the chain-carriers traveling along the railed way on the under side of the ladder against a lateral thrust or strain, the tumblers being adapted to allow the traveling carriers to pass between their sides while the chain passes over their rims.

710,120. BLAST FURNACE.—Gibbon C. Schackleford, Allegheny, Pa. A blast furnace having in combination a feed-hopper, a bell-chamber, doors arranged between the hopper and chamber, means for closing said doors. the

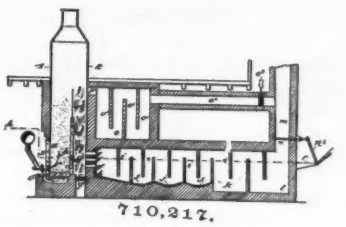


710,120.

closing means and the doors being carried by suitable independent supports movable relative one to the other to close the doors.

710,194. DEVICE FOR UNLOADING COAL-FLATS OR THE LIKE.—Harry N. Hughes, Duquesne, Pa. In an unloading device, the combination of suitably mounted and spaced standards having their upper portions curved, a carriage operating between said standards and revoluble means movable in unison and having differential speeds suitably connected to the carriage whereby the latter may be simultaneously raised and tilted.

710,217. FURNACE FOR SEPARATING ZINC FROM ORES.—Amédée M. G. Sébillot, Paris, France. In a furnace for extracting zinc from ores, a combustion-chamber divided into front and rear compartments adapted to hold the ores to be treated, and charcoal, respectively, air-blast pipes communicating with the front compartment, said compartments



710,217.

connected by openings in their division-wall, and condensing-chambers connected by suitable openings with the upper and lower portions of said rear compartment of the furnace.

710,221. AMMONIA-STILL.—George Stroh, Detroit, Mich., assignor of one-half to George Osius, Detroit, Mich. In a still-column, the combination with an upper series of superimposed pans for the volatilization of the free ammonia contained in the crude liquors; of a lower series of superimposed pans provided with inner and outer walls forming an outer chamber in each pan and a well extending upward from the bottom of the column, said well being closed at its top by the lower pan of the upper series and provided with openings in its sides for the overflow of the liquor therein into said outer chambers, a pipe to conduct the residue of liquor from the pans of the upper series into said well, a pipe to supply milk of lime to said well and means for heating said column.

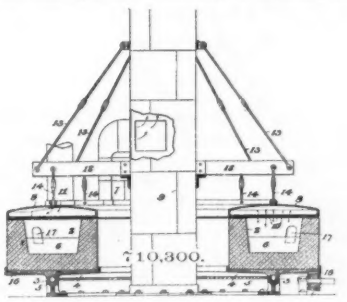
710,224. UNLOADING APPARATUS.—Francis H. Treat, Pittsburg, Pa. In unloading apparatus an outwardly-extending bridge arranged to receive a boat or receptacle beneath it, an inclined leg mounted upon and extending laterally from the bridge, and means for adjusting the leg up and down in the plane of its inclination.

710,247. BLAST-REGULATOR FOR FURNACES.—John W. Cabot, Johnstown, Pa., and Samuel W. Vaughen, Lorain, Ohio. In smelting ores with hot blast, an apparatus for automatically mixing hot blast and cold blast together, consisting of a hot blast pipe, a cold blast pipe, a branch pipe connecting the two, a valve situated in said branch pipe, and means for opening such valve upon increase of back pressure in the furnace.

710,257. MAGNETIC DRILLING-JIG.—Adolph L. De Leeuw, Hamilton, Ohio. In a drilling-jig, the combination, substantially as set forth, of an electromagnet having a polar face adapted for contact with the surface of the work to be drilled and provided with a cylindrical guideway having its axis at right angles to the plane of said polar face and terminating at or near the plane of said polar face, and a concentric guiding-bushing separably disposed within said guideway and adapted to engage the body of the drill near the cutting-lips thereof.

710,286. HYDRAULIC FORGING PRESS.—Henrik V. Loss, Philadelphia, Pa. A hydraulic press, having a stationary bed-plate and cylinder, a die holder fixed to said cylinder, a plunger arranged within said cylinder, a cross-head supporting the plunger, rams to return the said cross-head and plunger, and a second cross-head arranged above said cylinder and rigidly connected to said first cross-head and moving with it, combined with a punch working in said second cross-head, and independent actuating mechanism for said punch.

710,300. METHOD OF TREATING MATTES.—John A. Potter and William C. Harvie, Monterey, Mexico. A method of treating matte, consisting in exposing the surface



710,300.

of a bath of liquid matte to the action of an air-blast, breaking up the crust which forms on the surface of the bath, and bringing fresh portions of the bath into position to be acted upon by the air.

710,336. APPARATUS FOR MANUFACTURING GAS.—Hilman M. Papst, San Francisco, Cal. In an apparatus for manufacturing gas, the combination of a base divided into two chambers connected by a passage in said base, whereby a continuous combustion-chamber is formed and regenerative or fixing devices supported on said base.

710,346. ELECTROMETALLURGIC TREATMENT OF ORES OF COPPER OR OTHER METALS.—Constantin J. Tossizza, Paris, France. A process of treating electrolytically the impure and ferruginous solutions of sulphate of copper obtainable by the solution of copper ores in sulphuric acid, in order to recover the copper electrolytically without special preparation, by proceeding with the electrolytic treatment at a voltage between about two-tenths and eight-tenths of a volt with insoluble anodes maintained in contact with sulphuric acid.

PERSONAL.

Mr. Mark R. Lamb, of Los Angeles, Cal., has gone to Virginia City, Nev., to take charge of certain work in the Butters' Mill.

Mr. Ernst Wiener, manager of Arthur Koppel, of New York City, has returned from an extended business trip in Europe.

Mr. Bertram Hunt, cyanide expert, of San Francisco., has taken charge of the cyanide plant at the Exposed Treasure mines at Mojave, Cal.

Mr. Thomas Brown, of Franklin, Pa., has gone to Cerillos, Mex., where he will look after the business of the Consolidated Mining and Smelting Company.

Mr. Carr B. Neel, formerly superintendent of the Boston-Wyoming Smelter at Grand Encampment, Wyo., has taken charge of the plant being constructed at Sumpter, Ore.

Mr. E. McCormick, of Calumet, Mich., and Lordsburg, N. M., is examining mining property in Western California. He expects to arrive in New York City about November 1.

Mr. Benjamin Venuti has resigned from the traffic department of the White Pass & Yukon Railroad, and is now general agent for the Dawson & White Horse Navigation Company.

Messrs. W. L. Ehrich and H. L. Hachl, of the Wright-Gilman Company, have just returned to San Francisco from the examination of mining properties near Crescent Mills in Plumas County, Cal.

Mr. Ross E. Browne is one of the prominent mining men to testify in the case of the Stemwinder Mining Company vs. the Empire State Mining Company before Referee Warren Truitt, at Moscow, Idaho.

Mr. G. Beveridge, former owner of the Santa Rosalia mines, Sonora, Mex., recently returned to San Francisco, Cal. He will send a party of prospectors to the Sierra Madre mountains, Mexico, to be out 6 months.

Mr. George J. Cole, of Farmington, Mo., president of the Oregon & California Gold Fields, Limited, has been in Grant's Pass, Ore., inspecting the company's property on Soldier Creek, where a 10-stamp mill was recently installed.

Mr. A. L. Tuttle, mining engineer, has been appointed manager of the mines at Jimulco, Coahuila, Mex., to succeed Mr. J. S. Whyte, who died recently. Mr. Tuttle was formerly in the employ of the Guggenheims at Sierra Mojada as a mining engineer.

Messrs. Willis L. King, George B. Laughlin, William Larimer Jones, Thomas O'Connor Jones and B. F. Jones, Jr., of the Jones & Laughlins Steel Company, of Pittsburg, Pa., recently visited the company's iron ore properties in the Lake Superior Region.

Mr. George G. Blackwell, of George G. Blackwell Sons & Co., Limited, of Liverpool, Eng., arrived in Quebec on October 11. After visiting various Canadian cities, he will go to Cleveland, Pittsburg, Philadelphia, Boston and New York. At this writing he is at the Windsor Hotel, Montreal.

Mr. Charles S. Smith, president, and Mr. W. F. Fitzgerald, a stockholder of the Old Dominion Copper Mining and Smelting Company, both of Boston, Mass., and Mr. Wm. Garland, president of the Gila Valley, Globe and Northern Railway Company, have been at Globe, Ariz., and Los Angeles, Cal.

Dr. George W. Maynard, of New York, has just returned home from a visit to Nova Scotia on professional business. While in Halifax he attended the meeting of the Nova Scotia Mining Society, and, by special request, gave an interesting address on the mines and mineral resources of the Province.

Mr. A. E. Harper has been appointed vice-president and general manager of the Manufacturers' Coal and Coke Company, with headquarters at Connellsville, Mo. He will have jurisdiction over development, construction and operation. Mr. Harper has been fuel agent of the Illinois Steel Company for the past 12 years, and has filled the same position with the United States Corporation since its formation.

OBITUARY.

A. J. Pritchard, a pioneer gold miner of the Cœur d'Alene country, died at his log cabin near Murray, Idaho, on October 3, after a long illness from a complication of diseases. Mr. Pritchard was born in Connecticut in 1830, but spent his youth in Ohio, whither his father moved. It was not until 1880 that he visited the Cœur d'Alenes, looking up timber contracts for a Spokane firm. In 1882, in company with two other prospectors, Gelatt and Markson, he found gold in placers on Beaver Creek, near the present town of Delta, and on Pritchard Creek, and at a point just below Murray. Pritchard staked out the entire gulch of Pritchard Creek by power of attorney for himself and his friends. This led to years of litigation, in which Mr. Pritchard lost much of his property.

SOCIETIES AND TECHNICAL SCHOOLS.

Harvard University.—A pamphlet has been issued by the university describing the Department of Mining and Metallurgy. It gives the requirements for admission, fees and expenses, and describes the buildings and laboratory equipment and the work required each year. The department now has laboratories in metallurgical chemistry, ore-dressing, assaying, metallurgy and metallography. It also has excellent libraries, and offers unusual opportunities for advanced work. The course leading to the degree of Bachelor of Science in mining and metallurgy covers four years. Prof. H. L. Smyth is chairman of the department.

Engineers' Club of Philadelphia.—At the meeting on October 4 there were 66 members and visitors present. Mr. John C. Trautwine, Jr., presented a paper upon "Fire Pipe Lines," in which he described the engineering features of the water pipe lines for extinguishing fires that have been established in the cities of Cleveland, Buffalo, Providence, Milwaukee, Chicago and Detroit. His remarks were illustrated by a series of lantern views, showing the force of streams that could be thrown under different conditions in Boston and Philadelphia, with other features of the Philadelphia system. The general subject was discussed by Messrs. Charles G. Darrach, E. M. Nichols, H. Wilmerding, Francis Schumann, Carl Hering, Thomas C. McBride, John E. Codman and others.

INDUSTRIAL NOTES.

Fairbanks, Morse & Co. have sold through their Salt Lake office a 34-h. p. gasoline hoisting engine for Tonopah, Nev.

The George V. Cresson Company, of Philadelphia, Pa., is said to have some fair-sized orders on hand for transmission machinery for Mexico.

The Ruggles-Coles Engineering Company, that is supplying large orders for dryers to cement works, has offices in Chicago, Ill., and New York City. Recent purchasers of the company's machinery are the Lehigh Portland Cement Company, of Mitchell, Ind., and the International Cement Company, of Pittsburg, Pa.

The Stanley Gold Mining Company, of Idaho, as it has encountered pay ore in shipping quantities and is to begin work on an extensive scale, has ordered a mining plant complete from the J. H. Montgomery Machinery Company, of Denver, Colo., including a 60-h. p. engine, boiler, cars, ore buckets, track, etc.

The Joseph Soisson Fire Brick Company, of Connellsville, Pa., is operating its Volcanon plant in full, with a daily capacity of 50,000 brick, the Davidson plant, with 20,000 capacity a day, and the Layton plant, recently purchased of the Silica Brick Company, with 20,000 capacity a day. The Moyer plant has a daily capacity of 50,000 brick per day, which makes a total daily capacity of 140,000 brick.

Arthur Koppel, of 66-68 Broad street, New York City, has received an order from the Southern Pacific Railway for 15,000 tons of 80-lb. steel rails for prompt shipment, to be delivered within the next 2 months. This firm is receiving many contracts for industrial railroad equipments, including cars of every description, locomotives, rails, wheels, axles, turn tables, switches, etc., and keeps a large stock of such supplies on hand.

The Chicago Pneumatic Tool Company reports that owing to the amount of business it is receiving from the Southwest it has decided to place a representative in that district again, and, therefore, has appointed Mr. W. C Walker at St. Louis, with headquarters at 325 Lincoln Trust Building. The company believes this arrangement will greatly facilitate handling its business in the Southwest, and will be very advantageous to numerous customers.

The Woodward Governor Company has been incorporated at Rockford, Ill., to manufacture the Woodward governors for water wheels. The company states that these governors are now in use in all countries of the world and give complete satisfaction for their simplicity, reliability and quickness of action. The officers of the company are: A. W. Woodward, president: E. E. Woodward, vice-president and general manager, and J. Chas. Young, secretary and treasurer.

The Hockensmith Wheel and Mine Car Company, of Irwin, Pa., will build a $40,000 plant at Greensburg, to which its works will be removed. The plant will consist of a building 240 by 60 ft., for the foundry and machine shop; a building 190 by 50 ft., for a blacksmith and wagon shop; a 2-story pattern shop and pattern storage building, 25 by 100 ft.; a power house 30 by 40 ft., and an office building. The plant is to be ready by spring.

A 40,000-gal. tank on a 75-ft. steel tower has been added to the plant of the American Smelting and Refining Company, in Denver, Colo. The outfit was supplied by the W. E. Caldwell Company, of Louisville, Ky., which firm turns out on an average 30 complete tank and tower outfits and from 50 to 200 single towers a month. The company's yearly consumption of lumber—chiefly Louisiana cypress and Georgia pine—is about 3,000,000 ft. and it also uses about 300 tons of steel bands.

Norman B. Livermore & Co., of 320 Sansome street, San Francisco, Cal., have been appointed sole agents for the Scaife and We-Fu-Go water softening and purifying systems for the Pacific Coast by Wm. B. Scaife & Sons Company, of Pittsburg, Pa., who are the sole manufacturers of these systems. Norman B. Livermore, who recently organized the firm of Norman B. Livermore & Co., is a graduate of Cornell University. The company will give the subject of water purification its special attention.

Charles H. Besly & Co., of Chicago, Ill., report general business as very good, September having been one of the largest months in the amount of sales they have ever enjoyed. They are making many shipments of their Gardner grinders to various parts of the country, and are closing contracts for Helmet oil, Badger and Bonanza cups, which have been adopted by the largest makers of agricultural machinery. Messrs. Besly & Co. are also receiving numerous orders for complete shop equipments, and for tool and supplies for repairing and replenishing.

The Columbiana Clay Manufacturing Company, of Pittsburg, Pa., has been incorporated to mine, mill and deal in clay and other minerals for the manufacture of tiling, brick, etc. The incorporators are: H. J. Lawrence, of Pittsburg, Pa.; Daniel C. McCurdy, of Sheraden, Pa.; Louis T. Ffarr, of Rogers, O. The capital stock is given as $300,000. Mr. Lawrence was formerly traffic manager of the Pittsburg Coal Company. The company will build a plant for the manufacture of terra cotta, brick and sewer pipe at Rogers, O., on the line of the Pittsburg, Lisbon & Eastern Railroad, a few miles west of New Galilee, Pa.

The Atlanta Car Wheel and Manufacturing Company, of Atlanta, Ga., has applied for a charter. The petition is for a 21-year lease, and is filed by John W. Nute, of St. Louis, Mo., and W. J. Morrison and W. F. Newbert, of Chicago, Ill. The company, according to the petition, has a paid-in capital of $100,000, and asks for the privilege of increasing this amount to $500,000. A 9-acre tract of land has been purchased by the company in Atlanta, and 200 hands are erecting the plant. It is expected to have everything in readiness by November 1. Besides manufacturing car wheels, the company will engage in the manufacture of all kinds of iron, steel and brass articles. This industry will give employment to about 250 men.

TRADE CATALOGUES.

The Knight water wheels are described in an illustrated 48-page pamphlet published by Knight & Co., of Sutter Creek, Cal. By a proofreader's error the address of the company was given in this column last week as Oakland, Cal.

Air and gas compressors, vacuum pumps, pans, condensers and blowing engines, also steam and hydraulic elevators are described in the 78-page pamphlet, published by George Scott & Son, Limited, 44 Christchurch street, London, E. C., Eng.

The American Engineering Works of Chicago, Ill., continues to issue its series of monthly bulletins, covering mine supplies of all kinds. Recent issues give prices of switches, crossings and turn-tables, and of bar iron and steel, structural shapes, rails, rolls, stamps, dies, spiral-rivetted pipe, wire cloth, etc.

Some of the mining machinery described in the catalogues published by Geo. Green, of Aberystwyth, South Wales, includes Green's patent dressing floors, sectional rock crushers and crushing rolls, and improved buddles and jigs, also gold quartz stamp batteries and mills, engines, boilers and hydraulic giants.

Catalogue No. 5, published by Edward Chester & Co., Ltd., the mining machinery manufacturers of Renfrew, Scotland, describes the firm's horizontal multi-tubular type, Lancashire, combined Cornish and tubular, vertical cross tube and water tube boilers. The company also makes feed water heaters, steam separators, and boiler feed pumps.

The Economic Oil Burner Company, of Oakland, Cal., is sending out illustrated circulars calling attention to the merits of Larson's oil burners. These burners are in several sizes, suited for ordinary domestic purposes or for large boiler and steam heating plants. The burners are particularly adapted for burning low-grade distillate, but light like an ordinary gas jet, and, it is claimed, are quickly attached and easily cleaned and regulated.

An interesting product just put on the market by the H. W. Johns-Manville Company, of New York City and Milwaukee, Wis., is described in a little pamphlet sent out by the firm. It is the Manville dry powder chemical fire extinguisher which the company guarantees to put out incipient fires when used according to instructions. The powder is described as non-poisonous, unaffected by dampness and not deteriorating with age. It will not freeze nor cake in

the metal tubes, 22 in. long and 2 in. in diameter, in which it is supplied for use. The pamphlet contains testimonials and names of users.

The Sullivan Machinery Company, of Chicago, Ill., issues some advance sheets of its general mining machinery catalogue as a 54-page pamphlet, describing the Sullivan straight-line air compressor. This compressor has a simple steam cylinder and compound air cylinder on a cast bed-plate, the steam cylinder being fitted with Meyer adjustable cut-off valve-gear. Some excellent half-tone cuts show the construction of the inlet and discharge valves and the valve-gear. Tables giving the efficiency of air compressors at various altitudes, horse-power required in compressing, losses due to friction, and the amount of air required by Sullivan rock-drills appear in the pamphlet and add to its value.

Ernest Scott, of London and Glasgow, the largest maker of vacuum evaporators in the world, has issued a 48-page pamphlet, containing drawings, plans and descriptions of some new types of vacuum plants. These include triple and quadruple effects for concentrating caustic potash and soda, cyanide liquors, borax, nitrate of soda, etc. The company also makes patent plants for refining crude glycerine for chemical works and manufacturers of dynamite, and during the last year has brought out a sulphate of ammonia plant by which it claims to produce sulphate of ammonia with a fuel consumption amounting to 200 lbs. per ton of sulphate produced. The company also makes air and gas compressors, filter presses, water heaters and centrifugal machines.

John Davis & Son, Derby, Limited, of 26 Victoria street, Westminster, London, Eng., with a branch house at 140 West Fayette street, Baltimore, Md., issues a 52-page pamphlet describing mining, surveying instruments and miners' safety lamps. The surveying instruments include Davis' Hedley dial, an improved clinometer, and in particular Hoskold's transit theodolite for civil and mining engineers. In this transit the internal vertical axis, screwed to the horizontal vernier circle is perforated by a 1-in. hole, so that a direct sight may be obtained through the telescope and centre of the instrument down a shaft, a feature that will be appreciated by mine surveyors. The instrument is very compact in design, and many important parts are made of aluminum.

An illustrated catalogue of steam engines and machinery issued by Ransoms, Sims and Jeffries, Ltd., of Ipswich, England, is a pamphlet of 88 pages, especially given to descriptions and various adaptations of the firm's steam engines and boilers. The company's factory, established in 1789, now covers more than 12 acres of land and employs upwards of 1,800 men and boys. The company's London office, where inquiries and orders from dealers and exporters are received is at 9 Gracechurch street, E. C. The company makes a specialty of portable and semi-portable engines, using either coal or oil fuel, and stationary engines with separate boilers. The company builds boilers of the locomotive or of the ordinary vertical and cylinder types and patent multi-tubular boilers, besides traction engines and wagons and hoisting and haulage machinery.

Air compressors designed especially for use in mining operations are described in an 82-page pamphlet published by J. Geo. Leyner, of Denver, Colo. These compressors are built with the idea of high economy in use of power, and the new 1902 models have some important improvements, including the adaptation of the air-end base to an outside intake channel, an increase in the number of outlet valves, an improved valve-spring, new valve-cage, an increase in the number and individual area of inlet valve-openings, and an improved inter-cooling system. In addition the manufacturer has brought out a line of compound steam compressors, a line of low pressure machines, and a new line of belt-driven straight-line compressors. The manufacturer believes that in the Leyner patent inlet and outlet valves he has obtained the highest present development of the poppet type, and does not hesitate to claim their superiority to mechanically operated valves. The descriptions given in the pamphlet are full and clear, and the illustrations show excellent taste.

GENERAL MINING NEWS.

Mineral Oil Exports.—In September the United States exported 13,200,656 gals. crude oil, 451,002 gals. naphthas, 56,797,779 gals. illuminating, 6,769,866 gals. lubricating and paraffin, 3,606,796 gals. residuum; total, 80,826,099 gals., against 101,402,865 gals. in the same month last year, showing a decrease of 20,576,766 gals. The exports in the 9 months ending September 30 were 774,201,366 gals., against 785,264,364 gals. in the corresponding period last year, showing a falling off of 11,062,998 gals. in 1902, principally in illuminating oil.

Pipe Line Returns.—The September runs of Pennsylvania oil were the heaviest of the year and only a few thousand barrels below the shipments, says the Oil City *Derrick*. The Lima oil stocks made a heavier decrease, but the decline was not nearly so great as during the previous month. The net decrease was at the rate of about 7,000 bbls. a day. The net decline in the stocks of Pennsylvania and Lima oil during September was 207,850 bbls. and the stocks at the close of the month were the smallest in 2 years past. The Pennsylvania oil shipments in September were 93,070 bbls. a day and only 841 bbls. less than the average for August. The net stocks of Pennsylvania oil were 6,815,799 bbls. on September 30, the lowest point touched since April, 1896. Adding the net stocks of the Buckeye and other lines handling Lima oil makes a total of 24,841,785 bbls. in iron tanks on September 30. For September there was a decline of 127,142 bbls. in the net stocks of Lima and of 80,708 bbls. in the net stocks of Pennsylvania oil, making an aggregated decrease of 207,850 bbls. or at the rate of 6,928 bbls. a day. The net stocks of Lima oil held by the Buckeye and Indiana pipe lines were 18,025,986 bbls. on September 30. The average daily runs for September of the Trenton rock oil fields as reported by the Buckeye and Indiana pipe line were 57,500 bbls., or 190 bbls. more than the August average. The shipments of Lima oil for the past 4 months have been very large. For September, the daily average was 66,150 bbls., or 1,800 bbls. less than for August. The aggregate runs of the Pennsylvania and Trenton rock oil fields amounted to 148,416 bbls. a day in September and the shipments to 159,220 bbls.

ARIZONA.

Arizona Copper Company, Limited.—The production of the plant at Clifton for September was 1,310 tons (2,000 lbs.) of copper.

CALIFORNIA.

ALPINE COUNTY.

(*From Our Special Correspondent.*)

Kurtz-Evans Mining Company.—This company, at Loope, Henry Kurtz, superintendent, now employs 90 men. The new mill is about finished.

AMADOR COUNTY.

(*From Our Special Correspondent.*)

Horn.—At this mine, at Defender, Geo. Horn, superintendent, the tunnel is in 350 ft. In the airshaft on the boundary line good ore has been found.

McIntyre.—This property, at Amador City, is to be started up by John A. McIntyre for an Eastern company. The old North Star shaft, 1,000 ft. deep, will be unwatered and drifting carried into the McIntyre ground.

Moore.—The sale of this mine, at Jackson, for $70,250, to W. A. Nevills, of Jamestown, has been confirmed by the courts. The legal tangles having been cleared away, it is expected that work will be resumed.

South Eureka Mining Company.—In this mine, at Sutter Creek, John Truscott, superintendent, the shaft is below the 2,300-ft. level, and sinking continues. The 20-stamp mill is running steadily, and 55 men are employed.

Wildman.—Superintendent John Ross, Jr., has 30 stamps of the mill running steadily at Sutter Creek. In the Emerson shaft, now down 600 ft., sinking will be resumed shortly.

Zeila Mining Company.—This company, at Jackson, W. F. Detert, superintendent, will cease mining about October 31 to repair the shaft. It will take 2 or 3 months to finish this job.

BUTTE COUNTY.

(*From Our Special Correspondent.*)

California Consolidated Gold Mining Company.—This company is about to open certain drift mines in this county. The directors are: R. D. Davis and G. W. Lowry, of San Francisco; Max I. Jordan and S. P. Hatcher, of San Jose; C. R. Macomber, of Worcester, Mass, and S. C. Pratt, of El Paso, Texas.

Gold Bank.—At this mine, near Forbestown, Harry P. Stow, superintendent, 20 stamps of the mill have started cleaning up some ore on hand. The mine closed down a few months ago, and will doubtless be closed again when the ore is milled.

Morris Ravine.—This drift mine, near Oroville, owned by Edwin Goodall and others, is to be reopened. It was formerly a producer.

Western Power Company.—This new company has acquired the properties of the Big Bend Tunnel Company, of Buffalo, N. Y., and other large tracts. Electric power will be furnished to mines and to San Francisco. Maj. Frank McLaughlin, of Santa Cruz, and Guy C. Earl and Milton J. Green, of San Francisco, are mainly interested. The Big Bend tunnel was one of the largest river bed mining enterprises ever undertaken in California and one of the greatest failures. The tunnel to carry the water of the Feather River is about 12,000 ft. long and after being cut was enlarged. A large amount of river bed was laid bare, but the company never got adequate returns and the enterprise had been abandoned many years. The scheme was promoted by Dr. Pierce, of Buffalo, N. Y.

CALAVERAS COUNTY.

(*From Our Special Correspondent.*)

Benson.—The parties holding the bond on this mine near San Andreas have begun active work. Alfred Jones is superintendent.

Oriole Mining Company.—This mine at Angels, F. E. Dunlap, of Stockton, manager, will soon begin work on its 10-stamp mill, the millsite having been cleared.

Royal Consolidated Mines (California) Company, Limited.—It is stated that a contract has been let for a large stamp mill for this property at Hodson, J. C. Kemp van Ee, manager.

INYO COUNTY.

(*From Our Special Correspondent.*)

Death Valley.—Hundreds of prospectors are joining in a rush into this region, mainly to locate niter deposits, but also to search for gold ores. The region is a most desolate and difficult of access and almost impossible to live in. Water is very scarce and the heat in summer is excessive. Recent developments have attracted the prospectors.

KERN COUNTY.

(*From Our Special Correspondent.*)

River Bed Mining.—Frank, Frederick and Norman Sweet have located a number of continuous locations on Kern River between Bodfish Creek, near Havilah and the South Fork of the Kern River and will work the river bed and bars. The Huntington-Hellman Power Company will take about all the water from the river at this point and return it to the river below. Some of the bars prospect well.

St. John.—On this mine, 25 miles north of Mohave, W. F. Carpenter and F. E. Monaghan, of Santa Ana, have completed a 25-ton cyanide plant to work up about 20,000 tons of old tailings.

Yellow Aster.—A committee of miners and the superintendent of this mine at Randsburg have signed a statement that there is no trouble between the miners and that company, and that no strike is pending as reports have said. There is no dissatisfaction between the miners and the company either as to wages or treatment. Eugène H. Barton is superintendent and John Singleton is manager.

MARIPOSA COUNTY.

(*From Our Special Correspondent.*)

Hite.—It is reported that a good body of ore has been found in this mine near Athlone. Preparations are being made to start 40 stamps of the mill.

Monitor Group.—This group of claims owned by C. W. Anderson has been sold to H. C. Kennedy, of San Francisco, and E. J. Gilbert, of Columbia. A 350-ft. tunnel is to be started to cross-cut the ledge. The mine is advantageously situated as regards facilities for milling, etc. The location is a new one in a region heretofore considered barren.

MONO COUNTY.

(*From Our Special Correspondent.*)

Golden Gate.—This mine near Bodie has been bonded from J. R. Brown and E. F. Donovan, by J. L. Wedekind, of Reno, Nev., and J. L. Blackburn, who will work it. The price reported is $60,000, the first payment has been made.

NEVADA COUNTY.

(*From Our Special Correspondent.*)

Grass Valley Mines.—The following are the forces steadily employed: North Star (including Central), 150 men; Empire, 120; Omaha, 40; Bullion, 40; Pennsylvania, 40; Brunswick, 27; Coe, 20; Orleans, 20; Allison Ranch (including mill force), 73; Grass Valley Consolidated, 20; Golden Gate, 9; Jenny Lind, 15; Gold Hill, 18; Ben Franklin, 3; W. Y. O. D., 2; Conlin, 11; Comet, 4; Standard, 4; total, 616 men.

Kentucky Ridge.—This mine near Grass Valley, owned by J. Custine, Mr. Kendrick, C. Smith and Theo. Kohler and worked in very early days, has been reopened. There are 2 tunnels on the mine, but as yet no mill.

Nevada City.—This mine at Nevada City, closed many years, is being reopened by the Champion Mining Company, E. R. Abadie, superintendent and B. N. Shoecraft, secretary. The shaft is being retimbered and the mine will be drained through the old Wyoming tunnel. The Champion Company owns the following: Champion, Providence, Wyoming, Nevada City, Spanish and Merrifield mines. The champion in early days was a good producer.

Oustoma.—At this mine formerly the Pennsylvania, at Nevada City, the pumps have started and development will proceed rapidly.

PLACER COUNTY.

(*From Our Special Correspondent.*)

Azalea.—This mine at Blue Canyon, owned by the Blue Canyon Mining and Developing Company, is temporarily closed. Bids are asked for driving main tunnel 300 ft.

Big Dipper Drift Mining Company.—This famous old drift mine on the Iowa Hill Divide, profitably worked for many years, has been closed as practically worked out and a lease has been given to the foreman, F. H. Schulze, who will remove certain pillars and gouge out such gravel as he can on a percentage, employing 20 men. The company itself has employed from 40 to 60 men. In the last month of work a nugget worth $106, the largest ever found in the mine, was taken out. The mine was formerly owned by the late Columbus Waterhouse and since his death by a company of which Seymour Waterhouse is president and superintendent and E. W. A. Waterhouse, secretary, 16 Beale street, San Francisco. The mine is on the same divide as the Morning Star, which paid dividends for many years before being sold as practically exhausted.

Haub.—At this gravel mine near Shady Run, owned by Tacoma, Wash. men, with Robert Watson, superintendent, the new main tunnel is being extended.

Luke Fennan.—This claim near Shady Run is being opened by Julius Schwalenberg who is taking out considerable gold.

Morning Star.—This old drift mine on the Iowa Hill Divide bought not long since by Harold T. Power and associates, still continues to pay.

Old Crater.—Donnelly & Robinson, of Auburn, have a bond on this mine and are putting up a hoist.

Shady Run.—This quartz mine, R. A. Watson, superintendent, is making good progress with machine drills in its tunnels.

Tadpole Consolidated.—The main tunnel of this mine near Secret House is in 250 ft. and an upraise to tap the gravel is being made.

SANTA CLARA COUNTY.

(*From Our Special Correspondent.*)

Guadalupe.—This quicksilver mine for many years idle, is being reopened with 70 men at work. Oil fuel is used.

SHASTA COUNTYY.

(*From Our Special Correspondent.*)

Balaklala.—This copper property near Kennett is to be taken over by the Western Exploration Company, of which W. F. Snyder, of Salt Lake, Utah, is president, and in which Peter T. Kimberley and associates of Pittsburg, Pa., are interested. C. A. Malm was the former owner. The stated price is $650,000.

Inca Treasure Company.—This company is opening the Pioneer Black Oak Mine near Delta and building a tramway to the wagon road. It is shipping about 3 car-loads of ore weekly.

Modoc Chief.—On this quicksilver mine on Clover Creek 15 men are busy under Samuel Ball, doing development work.

Mountain Copper Company.—The miners at Iron Mountain have joined the Western Federation of Miners. There are about 400 miners employed.

Summit.—C. F. Graves has taken charge of this mine near Kennett.

SIERRA COUNTY.

(*From Our Special Correspondent.*)

Poker Flat Mining and Milling Company.—This company at Gibsonville, has 14 men building a wagon road to the property. A mill is to be built. John Lassiat is superintendent. The following directors have been elected: Geo. H. Willis, of Guthrie, Ok., president; C. H. Molter, Chas. Berg, John Lassiat, D. Lentz and J. O. Rheinhart.

SISKIYOU COUNTY.

(*From Our Special Correspondent.*)

Consolidated California Mining Company.—This company has purchased from John O. Welsh the gravel claims on French Creek near Callahans and is preparing to put in 8 giants. A large reservoir is also to be built to increase water supply. Pittsburg men form the company of which Mr. Welsh is superintendent.

Rusby.—A road is being built to this mine 15 miles from Yreka and a new hoist and boiler are to be put in.

SONOMA COUNTY.

(*From Our Special Correspondent.*)

Eureka.—At this quicksilver mine, near Pine Flat, a new 10-ton Fitzgerald furnace has been erected.

Mott Ranch.—J. W. Lawrence, of Minnesota, has begun work on the coal seam on the Moot ranch. The mine was worked years ago, but abandoned.

Socrates.—It is reported that this quicksilver mine has been sold for $600,000. Frank A. Huntington, the inventor of the Huntington mill, is one of the principal owners.

TUOLUMNE COUNTY.

(*From Our Special Correspondent.*)

Columbia Marble Quarry.—The marble quarry near Columbia of which W. D. Bannister is manager has a traction engine and 3 cars to haul marble from the quarry to Oakdale station.

Eagle-Shawmut Mining Company.—The chlorination plant at Chinese Camp, C. E. Uren, superintendent is running while the mine is shut down. The 40 stamps of the old mill have been added to the 60 stamps of the new one.

Eureka Extension.—These claims near Carter are under bond to W. P. Cunningham, of Bakersfield, who has men at work prospecting.

Laura Mining Company.—A local paper speaking of advertisements in certain Boston papers of this company owning what was the North Star Mine, says: "The promises in the statement and inducements offered are absurd, deceptive and exaggerated. The claims probably contain values which with the investment of capital and its expenditure in a careful and economical manner, might develop in time, but are now idle with no prospect of an early resumption."

Mack Consolidated Mining Company.—It is stated that this company has bonded its property near Big Oak Flat to L. H. Carver, of San Francisco. There is a 10-stamp mill on the mine with hoists, etc.

YUBA COUNTY.

(*From Our Special Correspondent.*)

Good Title.—It is stated that a substantial company will soon open this mine at Dobbins.

Pennsylvania and Dannenbroge.—These mines at Browns Valley, have passed into the hands of Frank W. Johnston, of Marysville, who owns the Jefferson Mine at the same place.

COLORADO.

BOULDER COUNTY.

Boulder Creek Mining and Power Company.—This company has been organized at Bay City, Mich., with a capital of $2,000,000. W. C. Penoyar, of Bay City, is president, and the board of directors consists of W. C. Penoyar, Benjamin Boutell, W. H. Sharpe, H. H. Norrington, W. H. Boutell, Robert W. Norrington, of Bay City, Mich.; W. V. Penoyar, of Saginaw, Mich.; H. S. Reynolds, of Jackson, Mich., and Frank R. Jeffrey, of Colorado Springs. The company has secured the riparian rights in Boulder Creek, this county, for power purposes, and proposes to build a plant of 10,000-h. p. and to remodel and make the old Coburn Mill, 6 miles above Boulder, into a cyanide plant of 100 tons capacity per day. A dam will be built, and 3,000 ft. of water per minute will be carried through a 36-in. pipe 1,500 ft. long, to Pelton wheels connected up to dynamos developing 2.000 h. p. A heavy fall is obtained in the 1,500-ft. pipe. The company has also obtained title to 70 acres of mineral land developed by about 3,000 ft. of tunnels. The ore deposits are large, but low grade. The company proposes to furnish electricity to the mines in that section of the Sugar Loaf District with which they can make contracts and conduct a general milling business. Mr. Jeffrey, the Colorado director of the company, will have his office in Boulder.

CLEAR CREEK COUNTY.

(*From Our Special Correspondent.*)

Gold King Mining Company.—This company is erecting a new 20-stamp mill at the head of Fall River. In the Gold King shaft and levels the pay streak is 3 ft. wide, running $20 gold to the ton. G. E. Freeman, of Idaho Springs, is manager.

Gum Tree Gold Mining and Milling Company.—Lessees, who recently began work on this company's holdings at Idaho Springs, have cut the rich shoot in the 3d level west and have 2 ft. of $50 ore.

Kelly Tunnel.—In this tunnel, at Georgetown, a rich vein of gold-bearing mineral has been cut.

Pittsburg Consolidated Mining, Milling and Tunnel Company.—This company, at Idaho Springs, is installing a Leyner compressor at the Dover Mine, and also putting in a new hoist at the Brighton Mine, both properties being in the mineral belt, 4 miles apart. W. L. Shaffer has been appointed manager of the 2 groups, taking charge November 1. He states that drifting and sinking will be carried on at both places. The Brighton has a shoot of ore already opened from the old Freeland ground.

Specie Payment.—E. W. Williams, of Denver, manager of this property, near Idaho Springs, has returned from London, where he closed a deal for all of the Kohinoor and Donaldson holdings, including the Donaldson Mill, at the mouth of Fall River and the Champion Mine, adjoining the Specie Payment on Bellevue Mountain. The mill is to be rebuilt and the tramway put in shape. About $30,000 will be spent in new equipment.

Tropic Mining Company.—Sinking has started on this property at Idaho Springs. The mill ore runs $14 a ton, and the shaft carries its entire width in this and smelting ore. R. B. Morton, of Idaho Springs, is manager.

FREMONT COUNTY.

Dorcas Mill.—This plant at Florence is being enlarged by 4 135-ton tanks and additions to the roasting capacity. When the improvements now being made are completed the mill will have a capacity of about 150 tons per day. J. M. Horrer is manager. The plant was built 2 years ago and has been constantly running since. The Begeer improvement of the cyanide process is used, and the extraction is said to be very high.

United States Smelting Company.—Under the directions of D. C. Jackling many improvements are under way at the works at Canon City. Shorter sections of roasting furnaces are being introduced, approving more economical, and the latest improved machinery. The office buildings have been entirely reconstructed and a large addition built for laboratory purposes. The plant will soon have a much larger capacity than under the former management.

GILPIN COUNTY.

(*From Our Special Correspondent.*)

Gilpin Machinery Receipts.—A hoist for Russell Mine, in Russell District; a hoist and boiler for Bon Ton Mine, in Eureka District; 2,000 ft. of ⅞-in. steel cable, for Gunnell Mining and Milling Company; a pump for the Lotus Mine, in Russell District; a 45 h. p. hoist for Richardson property, in Russell District.

Ann Rutledge Mining Company.—A good strike is reported in the 115-ft. level at 75 ft. in from the shaft, the crevice being between 2 and 2½ ft. wide, carrying values close to $50 per ton. J. McMillen, of Central City, is manager.

Forfar.—E. S. Moulton has taken a lease and bond on this property in Russell District, and will erect shaft building and install a 15-h. p. gasoline hoist. The shaft is over 200 ft. deep, and the property produced considerable pyritic ores when formerly worked.

Great Mammoth.—John Best, of Denver, and James Clayton, of Idaho Springs, have taken a lease and bond on this property in Illinois-Central District, and will install machinery, overhaul buildings and go to work as soon as possible. The shaft is less than 200 ft. deep.

Horseshoe Mining Company.—Milwaukee parties are interested and have started to sink 150 ft. deeper, the Barnes shaft being down 600 ft. at present. Superintendent Nic. H. Scheuer reports a fair-looking crevice in shaft bottom, and regular shipments are made to the Golden Smelter.

New National Tunnel, Mining and Milling Company.—A gasoline plant on the Horseshoe property is being taken down and will be installed on the Bryan, and a larger plant will be put up on the Horseshoe Mine. The same parties are going to install a plant on the Annex property. C. W. Baldwin, of Black Hawk, is manager.

Ophir-Burroughs.—A lift of 100 ft. is to be sunk, making total depth 1,300 ft. Daily shipments average 25 to 30 tons, the mill ore going about 2 oz. gold per cord, while some of the smelting ores go over $100 per ton. A Waters, of Nevadaville, is superintendent.

Specie Payment.—The September output was 110 cords of milling ores, which cleaned up 354 oz. gold, or over 3 oz. per cord; while the smelting product was 100 tons, expected to go between $75 and $100 per ton. Rhode Island parties are interested with E. W. Williams, of Central City, as manager.

HINSDALE COUNTY.

Pelican.—George Dryden, one of the owners and manager of this mine at Lake City has been at the mine accompanied by the company's engineer, James D. Caldon, of Denver, planning a tunnel from a much lower level than the present one. The Pelican group includes about 12 claims in the Henson Creek District.

Red Rover.—Work on this company's concentrating mill, pipes and transmission line is preceeding under the direction of Manager Farrell.

Ute & Ulay.—The new 4½ by 14 ft. shaft at Park City is down 150 ft., and good headway is made with air drills. The mines are still producing 2 cars of concentrates per day, or about 200 tons of crude ore. When the new shaft reaches the Ute vein the present mill will be overhauled and rebuilt.

LAKE COUNTY—LEADVILLE.

(*From Our Special Correspondent.*)

Leadville Ore Output.—There was another increase in production during the past week, making the tonnage 2,400 tons daily, including dump material sent to the zinc plants. The smelters are handling over 2,000 tons daily. The iron sulphide and oxidized iron product shows a slight increase.

Leadville Mineral Rights.—A great mass of testimony was introduced in a suit of the city against the Bohn, Coronado, Wolcott & St. Louis Smelting and Refining companies, which is now under advisement. The city claims the right to the mineral taken from under the streets and alleys of the above companies' ground. The defense contends that the city does not own that territory, owing to prior liens of the companies. A verdict for the city would mean a suit for large royalties.

Bon Air.—Manager Schlessinger has the water

own to the 500-ft. level, where new pumps are being put in.

California Gulch Gold Dredging Company.—I. B. Porter is president; A. B. McGaffey, vice-president, Continental Trust Company, treasurer; H. L. McClair, secretary; J. F. McDonald, A. D. Searl, J. A. Ewing and S. P. McDonald, directors. The company intends to operate the Uintah placer, west of Leadville, containing 75 acres. An order for a large steam dredge will be placed immediately. Tests of the gravel show that pay ore lies about 16 ft. below the surface, with values running from 50c. to several dollars per cu. yd. The 3 miles of California gulch, lying above the Uintah ground, produced some $10,000,000 when worked.

Fryer Hill Mines Company.—After pumping about 1,350 gal. per minute through the El Paso shaft for 5 months the main working level has been drained and the water can be held to permit further sinking. Preparations are being made for development work, and shipments will be regular, with a gradual increase after November 1. Work will also be conducted on the Jamie Lee, Dunkin, Tip Top and Sliver claims. About 30 tons daily is now coming from the Sliver and Dunkin, while samples from the Jamie Lee show good grade sulphide bodies. The cost of unwatering the property, including the pumping plant, repairing of shaft and cleaning out the drifts, is $72,000, against an estimate of $102,000. The pumping, including the cost of plant, amounts to $55,000. This is the greatest prospecting enterprise in the silver belt.

Ibex Mining Company.—Shipments average over 8,000 tons monthly. The company is awaiting the completion of the Yak Tunnel to its ground, which will give better drainge and cut the mineralized area at a great depth. At the present rate of progress the tunnel will reach the Ibex in 6 months.

Leadville New Home Mining Company.—A meeting of the stockholders is to be called shortly to consider extensive new work, for which money will have to be raised. Iron shipments continue at 150 tons daily, and Lessee Evans, on the Penrose, is shipping from a rich chloride body.

Ten-Mile Leasing Company.—This shaft, at Robinson, has cut a new vein at 900 ft., and a station is being cut preparatory to drifting. The new strike assays several hundred ounces silver.

SAN JUAN COUNTY.

(From Our Special Correspondent.)

Anna D.—The Hendrick Promotion Company is operating this mine in Picayune Gulch, near Silverton. A tunnel for draining the old workings will tap the shaft about 300 ft. from the surface.

Cashier-Dexter.—Work will be resumed shortly on this group on Eureka Mountain, near Silverton. A 100-ft. tunnel will be driven on the vein, which carries good values in both gold and silver.

Esmeralda.—Shipments continue to average 40 to 60 tons per week from this mine near Silverton. A new hoist is being installed and several new buildings erected.

Eureka Exploration Company.—Work has begun on a 3,200-ft. tunnel to cut the Ridgway vein 1,000 ft. below its present workings

Free Gold.—The vein now averages 50 ft. wide, with a 3-ft. pay streak of rich gold ore.

Grand Mogul.—This company is securing all the ground on its vein on either of the present workings. Fourteen more claims were recently secured under bond and 10 per cent of the price paid in cash. A mill is to be erected in the early spring.

Henrietta.—The 7th level at this Silverton mine is now in 1,400 ft. After 400 ft. more driving an upraise of 400 ft. will be made to the 3d level. A large body of black copper was recently opened in the 7th level, averaging well in gold, but no ore will be shipped until more stopes are opened.

Sapphire.—A contract has been let to drive the tunnel 200 ft. to cut the vein recently found in the upper workings. About 1,000 ft. of work has been done and considerable ore stoped in the upper levels.

Stony Pass Group.—The Gillen Tunnel is in 250 ft., with 100 ft. more to go before the big cross lead is reached.

Western States Gold Mining Company.—Work continues steadily at the Chattanooga Tunnel in Deer Park, and rich placer gravel was recently cut. A large boarding and bunk house is being erected and supplies are being laid in.

TELLER COUNTY—CRIPPLE CREEK.

(From Our Special Correspondent.)

Acacia Gold Mining Company.—Work is pushed on a shaft on the south end of the Burns claim to get the extension of the ore recently opened up on the Shurtloff property. Work has also been renewed on the Falvey lease.

Ben Hur.—Good reports continue from this company's property on Gold Hill.

Gold Coin Mining and Leasing Company.—It is understood that a good body of ore has been opened up on the 900-ft. level of this property on the Dorothy vein. The Gold Coin is one of the large mines of the district and is taking out a large amount of ore. It is controlled by the Woods Investment Company.

Portland Gold Mining Company.—The mill at Colorado City is doing good work and treating a large amount of ore. The property is in splendid condition. J. R. Finlay is general manager.

Theresa Gold Mining Company.—John T. Milliken, of St. Louis, president of the Golden Cycle Company, has purchased the stock of Judge Colburn, somewhere around 700,000 shares, which gives Mr. Milliken control. The price paid is not known. The property is on Bull Hill, adjoining the Golden Cycle, and has been equipped with an 18 by 38-in. first motion Allis-Chalmers hoist and a 12-drill compressor. It is understood this new machinery put the company in debt about $45,000. The new management has leased the property to L. E. Hill, secretary of the Golden Cycle Company.

War Eagle.—Darnell and associates are still shipping considerable ore from their lease. The shoot is about 15 ft. wide and is shipped without sorting, the ore running about $35 per ton. The property belongs to the Stratton estate.

Water Situation.—Discussion goes on. The principal propositions at present are the Newell and the Bainbridge tunnels. The former cuts Beacon Hill only about 100 ft. below the level of the Standard tunnel, and if used will only prove a temporary relief. The other tunnel, known as the Bainbridge, will cut the El Paso Mine at a depth of 600 ft. and the Elkton at about 900 ft, and will be about 6,000 ft. long. Other deeper tunnels are also discussed, and some mining men have advocated forming a pumping association.

GEORGIA.

LUMPKIN COUNTY.

(From Our Special Correspondent.)

Crown Mountain Gold Mining Company.—This company is erecting a dam on the Chesantee River, a short distance northeast of Dahlonega. This water power, estimated at about 1,000-h. p., will be used in part to supplement their present power for the gold mining plant on Crown Mountain.

Dahlonega Coal Mining Company.—A company has been organized to prospect and develop supposed discoveries of coal on Black Mountain, near Dahlonega. The incorporators are: W. A. Charters, W. S. Huff, Dr. Whelchel, H. D. Gurley, H. D. Ingersoll, H. B. Crawford, J. F. Moore, of Dahlonega, and Joseph Caldwell, of Porter Springs.

Etowah Gold Mining Company.—This company has been organized by the election of the following officers: Chairman, Col. W. P. Price, Jr., Dahlonega; secretary, W. J. Worley, Dahlonega; directors, Dr. W. Jos. Harn, Francis Shunk Brown, Jos. R. H. Whetstone, Wm. C. Keau, Jr., Jos. Von Neida, Wm. C. Spraul, J. H. Nichols and Jos. De Forest Junkin, Philadelphia, Pa. The company purposes working the Betz Mine, near Auraria.

Lockhart.—This gold mine, belonging to the Dahlonega Consolidated Company, was recently leased by Mr. Maxwell, who is mining and milling about 25 tons of soft ore per day.

Pratt Pyrites Mines.—At this mine, near Dahlonega, the 3-compartment shaft being sunk to a depth of 290 ft. is cutting almost solid bodies of pyrites, running from 42 to 48 per cent. sulphur, 2 per cent copper and $2 per ton in gold. A complete plant will be installed for concentrating the lower-grade ore, while upon the completion of the railroad the lump and fine will be shipped. It is proposed also to build a sulphuric acid plant near the mine. Cross-cuts already made ran 35 ft. through solid ore, while deep work with a diamond drill demonstrated the depth of the ore body.

(From Our Special Correspondent.)

Dahlonega Consolidated Gold Mining Company.—This company is soon to begin the development of its magnetic iron ore deposits a few miles southwest of Dahlonega.

IDAHO.

BLAINE COUNTY.

Bell Creek Consolidated Mining Company, Limited.—This company has been organized with principal place of business in Hailey and a capital of $1,000,000. C. C. Ruthrauff, Fred. R. Reed, E. G. Oliver, F. E. Ickes, Jas. M. Williams, John F. Williams and John J. Banville are interested. The property consists of 7 claims in the Rosetta mining district. The ore is partly free, but principally a sulphide. Little development has been done. The manager is to drive a tunnel that will cut the vein at a depth of 200 ft. The officers are: President, C. C. Ruthrauff; vice president, Fred R. Reed; secretary, F. E. Ickes.

Minnie Moore.—This mine, near Hailey, is said to show on the 90-ft. level a shoot of ore 8 in. to 3 ft. thick that runs 100 oz. in silver and 70 per cent lead, which has been followed for 250 ft. The mine is shipping 3 cars a week of this rich ore. In addition there is quite a large body of concentrating ore lying beside the rich streak.

Tip Top.—The management of this mine, near Hailey, is sinking below the 1,000-ft. level, and developments are reported highly satisfactory.

IDAHO COUNTY.

American Eagle.—This company is now working 20 men at the mine on Siegel Creek. A strike of high grade gold ore is reported. The company is moving in a stamp mill from Dixie, which was purchased from the Midas Gold Mining Company, and expects to have the mill in running order by December 1.

Warrens District.—The Silver King Company is working 50 men and is installing the old Iola Mill at the property. The Golden Rule, at Grouse Creek, is working 75 men, building roads, ditches, etc., and installing a saw-mill. Other properties show similar activity. At the M. B. Morrow property, on Fall Creek, an ancient river bed is exposed, showing a width of 200 ft., carrying good values.

SHOSHONE COUNTY.

All of the suits, numbering 16, between the Bunker Hill & Sullivan and the Empire State-Idaho companies are expected to be brought up before Judge Beatty at the coming term of the Federal Court to be held in Moscow early in November.

Horst-Powell Mining Company.—Lewis P. Larsen, of Wallace, has a bond on the copper property owned by this company, about 6 miles north of Kingston. The owners were E. L. Powell and Mark F. Mendenhall, of Spokane, and E. E. Horst, of Kingston. A 50-ton smelter is projected. The ore is called self-fluxing.

Mascot Gold Mining Company.—The incorporators of this company are: C. S. Crysler, J. M. Savage, B. M. Crysler and J. F. Griffin, all of Delta, and H. E. Chaney, of Missoula. The company is organized with a capital stock of $500,000, in $1 shares. That makes the fourth dredge company which will be operating on Beaver Creek, with Mr. Crysler as president of all of them.

New Jersey Gold Mining Company.—This company, through J. H. Tilsley, of Spokane, recently purchased the Coleman gold property, situated on Big Creek, about 6 miles from Wallace. The property was owned by George W. Coleman.

Snowstorm Mining Company.—This company claims to have spent about $21,000 in developing a group of copper claims 4 miles east of Mullan. A tunnel has been driven 675 ft. and a drift 235 ft. The ore contains azurite and cuprite, with values in silver and gold. Six men are now employed. The officers are: President, James Bean; vice-president and general manager, Thomas Donnelly; secretary, Frank J. Edwards. They, with H. H. Burns, Edward Donnelly, Fred L. Taft, John A. Kiefer and Joseph Thennis, form the directors.

Sonora Mining and Milling Company.—This company, owning 12 claims 1 mile east of Burke, is reported to have cut a good vein of galena at about 900 ft. from the mouth of its tunnel.

INDIANA.

Coal Situation.—There is a shortage of coal in most localities of Indiana, and the inability of railroads to hurry shipments has caused many factories to shut down. The railroads all over the State are short and are confiscating coal, causing complaint from wholesale dealers.

LAWRENCE COUNTY.

(From Our Special Correspondent.)

Grading is being pushed very rapidly on the new Missouri Southern Railroad, which is nearly completed at Flat River, and is well advanced to Bismark, the western terminus on the Iron Mountain Railroad.

Midland Cement Company.—Work is pushed on this company's plant near Bedford. When completed it will have a capacity of 3,500 bbls. a day.

VIGO COUNTY.

(From Our Special Correspondent.)

Codifying Mining Laws.—A joint committee of miners and operators of the Indiana coal fields is holding a joint session to codify the Indiana mining laws for the benefit of the incoming legislature. The committee was oppointed by Governor Durbin. Some queer dead-letter laws are being discovered.

MICHIGAN.

COPPER—KEWEENAW COUNTY.

(From Our Special Correspondent.)

Adventure.—This company is now stamping satisfactorily 480 tons of rock daily at the new mill.

Allouez.—Work is confined to the old mine on the Allouez conglomerate lode. Openings recently reveal good rock.

Ahmeek.—Sinking in the exploratory shaft on this property is well under way. Cross-cutting will begin shortly.

Mass.—This company will push development and increase the number of drills. The mill at Keweenaw Bay is stamping 550 tons of rock daily, with one head in commission. At the mine nearly 35 air drills are busy.

Mohawk.—Consignments of machinery for the new stamp mill at Traverse Bay have been received from the Nordberg Manufacturing Company, of Milwaukee, Wis.

IRON—GOGEBIC RANGE.

Hayes.—This exploration on section 6, T. 39, R. 29 has been abandoned, the ore found being very lean.

Yale.—J. R. Thompson, who has been superintendent of the Schlesinger mines, recently made a careful inspection of this mine at Bessemer, and has taken the position of manager. The Yale was formerly the old Valley Mine, which was, up to the time the Ashland Iron and Steel Company took hold of it, practically an unknown proposition. It lies between the Newport and Colby.

IRON—MENOMINEE RANGE.

Elba Mining Company.—This company's property has been sold by the receiver, pursuant to a court order, the purchaser being A. L. Flewelling, of Crystal Falls, for Corrigan, McKinney & Co.

Pettit.—Two new Prescott compound pumps, with a capacity of 800 gal. per minute each, have been added to the plant at this mine. It is a Republic Iron and Steel Company property.

Spencer.—This property, near Norway, Mich., is optioned to a company in the interest of Oglebay, Norton & Co., and will be thoroughly explored.

MISSOURI.

JASPER COUNTY.

(*From Our Special Correspondent.*)

Joplin Ore Market.—Unusual strength developed in the zinc market during the past week. There were no advances on the top price, though several lots sold upon an assay basis which may mean an advance when settlements are made. The lead ore market remains steady. The tonnage was record breaking, the purchasing agents being anxious to secure all the zinc ore possible, and a great amount was purchased for future delivery.

The highest price paid during the week for zinc ore was $38.50 per ton upon a straight bid. Some lots sold on an assay basis, however, will probably top this price $1 per ton. The product of the Doogin Diggings, near Joplin, was bought on an assay basis of $35 per ton for 60 per cent, and it is believed this lot will assay high enough to bring the top to $40 per ton. Lead ore brought $24.75 per 1,000 lbs., delivered, and the demand was extremely strong.

Following are the sales of the Joplin District for week ending October 11:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	3,972,600	397,900	$79,358
Carterville-Webb City	2,216,490	373,600	45,818
Galena-Empire	1,260,000	191,980	25,967
Aurora	820,610	11,500	11,231
Oronogo	349,900	30,850	6,829
Duenweg	2,046,130	112,710	38,597
Cave Springs	111,340	7,650	2,057
Central City	107,400	13,760	1,835
Prosperity	338,880	32,860	6,743
Alba-Neck	468,540	41,300	8,456
Carthage	446,760	.....	8,042
Zincite	428,770	5,570	7,455
Spurgeon-Spring City	195,130	22,330	2,025
Granby	390,000	35,000	5,435
Carl Junction	287,540	.....	5,320
Fortuna	339,770	60,730	7,681
Wentworth	151,670	.....	2,106
Total	13,841,130	1,337,740	$264,955
Total, 41 weeks	426,066,740	51,015,170	$7,565,984

Zinc value, week, $231,197: lead, $33,158; zinc value, 41 weeks, $6,413,751; lead, $1,152,230.

Duenweg Mining Company.—This old property is being re-opened by G. C. Playter as manager. The plant produced over $1,000,000 worth of ore and was abandoned, but recently a lrge run was found which is now worked with great success.

ST. FRANCOIS COUNTY.

(*From Our Special Correspondent.*)

National Lead Company.—This company's mine, at Flat River, is temporarily shut down from an accident to the settling pond at the mill, the bottom of which broke down, letting the pond into the mine. This will delay work until the bottom of the pond is closed with concrete, as has been done twice before.

St. Joe Lead Company.—This company is making extensive improvements at its Bonne Terre group of mines, to concentrate work at 5 different shafts, at No. 1 shaft by underground haulage with a compressed air locomotive. A large Gates crusher will be installed, replacing several small Blake crushers and crusher feeders, making a large saving in crushing as well as hoisting.

MONTANA.

FERGUS COUNTY.

(*From Our Special Correspondent.*)

Case-Wilson Cyanide and Developing Company.—This company is to develop mining properties and erect a cyanide plant in the Warm Springs District. It has headquarters in Trenton, N. J. Frank T. Swanser, of Lewistown, is named as Montana agent. The capital stock is $150,000, divided into 35,000 shares; 5,000 have been sold for cash. The other assets of the concern consist of 6 mining claims in the Warm Springs District, not far from Kendall.

LEWIS & CLARKE COUNTY.

(*From Our Special Correspondent.*)

Big Indian Mining Company.—The new mill on the old Winscott property is receiving the finishing touches.

Gold Belt Mining Company.—This company, at Empire, is starting its new 500-ton cyanide mill to work the tailings from the 60-stamp Empire Mill.

GRANITE COUNTY.

Mussigbrod Properties.—These properties, at Garnet, are closed down and will probably remain closed until next summer. Dr. Peter Mussigbrod has charge of the properties.

JEFFERSON COUNTY.

(*From Our Special Correspondent.*)

Basin & Bay State Mining Company.—F. Aug. Heinze has secured from the stockholders of this company a 4-years' lease and bond on the smelter and concentrator at Basin. Mr. Heinze has 160 workmen preparing the concentrator for use. It was found necessary to rearrange the plant, and it will be enlarged to 1,000 tons capacity. Mr. Heinze's option to purchase the plant at the end of the 4 years lease is for $345,000, it is understood. A minority of Basin Bay State stockholders object to the terms of the contract with Mr. Heinze, and will endeavor to have the courts declare it void, claiming fraud.

POWELL COUNTY.

Gladstone.—L. U. Loomis, general manager of this company, operating near Pioneer, reports over 300 tons of machinery and lumber hauled out to the mines, the excavation for the mill is completed and the ditch line and flume finished. The flume is 4,000 ft. long.

PARK COUNTY.

Bear Gulch Mining Company.—Judge Henry has appointed Alex. Livingston, of the First State Bank, receiver of this company's property, declaring in the suit brought by John Mordock that the present board of directors and officers was not legally elected. In his decision Judge Henry held that Rose Tracey owned 5,000 shares of stock, which was increased by a subsequent issue to 40,000, and that at the meeting held to increase the capitalization no notice of such meeting was given Rose Tracey, and that notices issued and served upon others were contrary to law. The Bear Gulch Company has a capitalization of $1,500,000, held principally by residents of St. John, N. B. The parties who instituted the action are headed by P. L. Kimberly, and are represented by John Mordock, trustee. It is estimated the cost of the inquiry will exceed $30,000, with no end in sight, and the case may be carried through the courts for years.

(*From Our Special Correspondent.*)

Bear Gulch Gold Mining Company.—Alex. Livingston, of Livingston, has been appointed receiver by Judge Henry, and is to furnish a bond of $200,000. The company is building a 40-stamp mill and a cyanide plant to treat the tailings. What effect the appointment of a receiver will have on this work is not known.

French Gulch Placers.—This gulch, situated in the extreme south end of the county, is again the scene of considerable activity. When the early Argonauts in the 60's drifted to Montana this was one of the noted gold finds. It was discovered in the fall of 1864. During the next 5 years it has a record of having produced $5,000,000 in gold dust. Some placer mining has been done each season. About 3 years ago, W. R. Allen, of Anaconda, consolidated the ground under one ownership and made arrangements to open up the old diggings in a systematic way. Two years ago a gold dredge, bought of the Risdon Iron Works, of San Francisco, was put in, the Postlewaite type. It has just about finished its second season's work successfully. The cost of operation, including the interest on the investment, was about 5c. per yard of gravel handled last year. This year it is thought by the management to be somewhat less. The cost of installing the plant was about $40,000. The capacity of the dredge is rated at 2,000 yds. daily. Some distance above the dredge, in French Gulch, Mr. Allen has in operation an Evans hydraulic elevator, having a capacity of 1,000 yd. of gravel daily, put in last year. At the head of the gulch, 3 miles above the dredge, Mr. Allen has hydraulic diggings, the season's clean-up being about finished. The gold of the gulch is coarse, especially on the upper ground, nuggets weighing several dollars each are frequently found. The gold is bright and worth $18.75 at the mint.

Illinois Mining Company.—A decree of foreclosure has been granted by Judge Hall, at Salt Lake, in favor of the plaintiff in the case of Joseph Nelson against the Illinois Mining Company and the Copper Glance Mining and Milling Company, foreclosing the defendants' interest in and to the Hogg, Illinois Chief and other mining claims in the West Mountain District. The amount of the judgment is $12,500, with interest and attorney's fees.

St. Julien Gold Mining Company.—This company is to operate at the head of Emigrant Gulch. The capital stock is $500,000, with $1 shares, $400,000 being subscribed and $100,000 placed in the treasury. The directors are P. J. Nolan and J. F. Nolan, of Livingston; W. A. Barclay, L. H. Jones and A. F. Peck, of Detroit, Mich. These people have operated a mill on the mine for 2 years and over.

SILVER BOW COUNTY.

The East and West Stewart and Original mines have been temporarily closed on account of a change being made in the power plant at the concentrator of the Butte Reduction Works. The smelter continued running, but the concentrator is idle, and will be overhauled. Electricity is being substituted for steam. About 700 h. p. of electricity from the Big Hole power station has been in use for the motors that drive the ore cars and other machinery about the plant, and the concentrator will use this power. A 600-h. p. motor, furnished by the General Electric Company, has been installed. In future all the power used at the works will be supplied by the Missouri River Power Company, whose dam and power station are near Helena, more than 80 miles away. The Missouri River Company will furnish about 1,300 h. p. The matte furnace building, which was partially destroyed by fire, is in operation again. The structure has been rebuilt with steel frame and corrugated iron. The coal bin is to be rebuilt about 100 ft. east of the furnace building, and the coal taken to the furnaces by conveyors. The old coal building was at one end of the furnace building, and during the fire a large quantity of coal was destroyed. In the saw-mill and machinery departments of the reduction works there are a number of useful labor-saving devices, where the mine timbers are prepared. Mr. Doull has invented a device for sawing out the ends of mine timbers that saves much time. The water question gives trouble, and the greatest economy has to be followed, the water being used over and over again.

NEVADA.

ORMSBY COUNTY.

Morgan Mill.—J. P. Woodbury is to overhaul and rebuild portions of this mill on the Carson River, near Empire. A cyanide plant will be in operation. A 30-h. p. electric motor will be installed, and power will be furnished by the Truckee River General Electric Company.

NYE COUNTY.

Tonopah District.—The camp is reported rather quiet. The leases on the Mispah have all expired, and the company is putting in new hoisting machinery and preparing to work the mine in a systematic way. The Mispah Extension Company has struck some ore in a group of mines on the opposite side of Mount Oddie. Rodgers & Adams, of the Tonopah Water and Power Company, have bought 50 in. of water in Twin River for $10,000. The company also has an option on other holdings on the river and the remaining water rights, and has completed a survey of the proposed line, 60 miles in length, from where the water will enter the 12-in. pipe to the reservoir in Tonopah. W. B. Sollender will put a 35-h. p. engine and hoist on the Gold Hill Extension claims, on which a 2-compartment shaft has been sunk 75 ft. Some good ore is reported found.

OHIO.

BELMONT COUNTY.

Empire Coal Company.—W. P. DeArmitt and Sol Schoyer, Jr., have sold their holdings in this company to Jacob Kaufman, J. R. Paull, I. W. Frank and W. L. Kann, who formed the original underwriting syndicate with DeArmitt, for $500,000. The company intends to open its new mines on its 31,400-acre tract and increase its daily output to 10,000 tons. It is also understood to be the purpose of Frank M. Osborne, former chairman of the Pittsburg Coal Company and now at the head of the Pittsburg Terminal Railroad and Coal Company, to open a 16,000-acre tract adjoining the Empire tract and develop it this winter for Lake shipments. The Empire tract has a frontage on the Ohio River of 16 miles, and is reached by the Cleveland & Pittsburg, Baltimore & Ohio and Wabash extension. It is the intention to open 3 new mines each on the Pennsylvania and Baltimore & Ohio and 4 on the Wabash, equipped with modern electrical machinery. Tipples and electrical equipment for 3 mines have been put in at a cost of $100,000. The

Empire Company is shipping to Detroit, Chicago, Cleveland and along the lakes. Two new mines will be opened for the river trade. The company will arrange to load directly from tipple to barge. The company's capital is $5,000,000 and $2,000,000 bonds. J. R. Paull is president. Thomas H. Bakewell secretary, I. W. Frank treasurer, with Jacob Kaufmann and W. L. Kann directors. L. F. Newman is general manager and E. H. Weitzel general superintendent.

OREGON.

BAKER COUNTY.

(From Our Special Correspondent.)

Baisley-Elkhorn.—This property has been sold to F. P. Hayes for $40,000 and his assumption of outstanding indebtedness, making a total consideration of about $100,000. The former owners were mainly Connecticut people. The new management is to install large electric power plant for the mine and furnish power to the public, and will drive a long crosscut tunnel.

Cracker-Oregon.—The frame for the 20-stamp mill is up, and machinery for 10 stamps is arriving. The supposed extensions of the property south has been sold to the Killen, Warner, Stewart Company. Consideration unknown.

Midway.—This group on the Mother Lode belt has been acquired by H. T. Hendryx and consolidated with the Portland group. The consideration is given as $10,000.

Old Abe.—A 2,000-ft. hoist, sinking pump, boilers and engine, and 6-drill compressors have been ordered.

GRANT COUNTY.

Cougar.—Tests of ore are being made, preparatory to resumption. The property has a 250-ton cyanide plant, dry crushing, which failed to save values.

Monumental.—A shoot of silver-gold ore is reported in a drift from 1,600-ft. crosscut, that carries very high values in silver and 2 or 3 ounces gold and is 10 to 20 in. wide. Four power drills have been received, and the compressor is ready. The old pan amalgamation plant is to be replaced by cyanide tanks to receive the ore after passing through a Howell & White roaster.

Red Boy.—Fifty men are constructing a dam 450 ft. long, 50 ft. high, 20 ft. wide on top, and 60 ft. wide at the bottom for the big electric power plant, to cost about $150,000. The dam will be completed this fall, and generators installed early in the spring.

PENNSYLVANIA.

Pennsylvania Railroad Company.—Shipments originating at the company's lines east of Pittsburg and Erie from January 1 to October 4, inclusive, were: 1,625,031 tons anthracite coal, 19,803,869 tons bituminous, and 7,447,303 tons coke. Compared with the corresponding period last year anthracite shipments show a falling off of 1,902,751 tons, while bituminous records an increase of 4,800,168 tons, and coke, 1,275,825 tons.

BITUMINOUS COAL.

An Altoona dispatch says that coal land deals in Cambria, Indiana and Jefferson counties within the week aggregate $2,000,000. D. A. Palmer, of Indiana, in the interest of eastern capitalists, has acquired 30,000 acres, and 40,000 more acres have been taken up by the Jefferson & Clearfield Coal and Coke Company, J. L. Mitchell and the Indiana Coal Company. An agent of the Berwind-White Company has been securing small tracts here and there. One thousand or more farmers have disposed of their lands.

Bessemer Coal and Coke Company.—This company, with mines at Bradenville, Humphreys, Ruffsdale and Masontown, is improving its Bradenville plant. A new engine house has been erected, large tube boilers put in, the tipple raised and other improvements costing $20,000 made. The company owns about 40,000 acres of coal lands, and recently acquired a large tract of coal land in West Virginia.

Wells Creek Coal Company.—This company, at Listie, on the Somerset & Cambria branch of the Baltimore & Ohio Railroad, has passed from the control of F. C. Keighley, I. W. Semans and T. B. Semans, all of Uniontown, the purchasers being S. A. Kendall, W. T. Hoblitzell and F. B. Black, of Meyersdale; J. M. Black, of Somerset; E. T. Norton, of Connellsville, and J. L. Kendall, of Pittsburg. The consideration was about $100,000. W. T. Hoblitzell of Meyersdale will be the new manager. The property has been worked for 6 years. The mine is now shipping 600 tons of coal daily to the seaboard.

SOUTH DAKOTA.

LAWRENCE COUNTY.

(From Our Special Correspondent.)

Bear Gulch.—A syndicate of Colorado and Eastern men has bonded 2,000 acres, including the old Inter-Ocean Mine, the Callanan property and ground belonging to M. D. Edgerton and others of Spearfish, and is preparing to incorporate under South Dakota laws. H. J. Mayham, A. M. Stevenson and others of Denver are back of the enterprise.

Eleventh Hour Group.—John Madill, one of the owners, has a lease on the ground, west of Spearfish canyon, and is taking out ore for shipment. This will be the first ore to be shipped from that side of the Spearfish.

Golden Crest Mining Company.—Excavations are finished for the wet crushing cyanide plant on the head of Two Bit Gulch. Water will be supplied from the mine. The mill will have 10 stamps to start.

Homestake.—The new cyanide plant for retreating tailings at Gayville started running one year and 12 days after ground was first broken. It has a capacity of from 700 to 900 tons daily. There are 5 sand vats, each with a capacity of 1,000 tons. It takes 40 hours to fill a tank with tailings and turn on solution and it is expected that from 5 to 8 days will be required for treatment. The tailings come to the plant from the Deadwood-Terra, Caledonia and Father de Smet stamp mills through large pipes. There is a battery of 5 stamps on the third floor of the mills to crush the siliceous ores found on that side of the hill. The company expects to save $25,000 a month by this plant.

Penobscot Mining Company.—The 40-stamp wet crushing cyanide mill is nearly ready and will start before November 1. The building is finished and painted, and most of the machinery in place. Ore is being stored in the bins.

Potsdam Gold Mining Company.—The following are officers: William Lardner, president; John Gray, vice-president; W. L. McLaughlin, secretary; Albert J. Malterner, treasurer; Robert N. Ogden, director, all of Deadwood except Vice-President Gray, who lives at Terraville. The company is incorporated under South Dakota laws for $2,500,000 in shares of $1 each and controls 600 acres of land at Ragged Top, adjoining the properties of the Deadwood-Standard and Spearfish mining companies.

University Gold Mining and Milling Company.—The South Dakota Mining Company has sold to this company its Annie Creek property of 32 acres. Development work has been going on for several weeks. The Burlington railroad crosses the ground. Siliceous ore will be shipped to a cyanide plant until the company builds a mill of its own.

PENNINGTON COUNTY.

(From Our Special Correspondent.)

Ajax Mining Company.—A cross-cut is being driven at the Standby Mine under contract. Progress is slow, as the work is done by hand.

Columbia Mining Company.—Free milling ore is reported in a new shaft showing a vein 10 ft. wide. The company owns 600 acres near Rochford.

Ohio-Deadwood Mining Company.—The new tunnel is 200 ft. long, and is in free milling ore. The plant comprises boiler, air compressor and 3 drills.

Rapid River Placer.—Final clean-ups are being made by the Big Bend, Magpie and Rapid River Placer mining companies. The yield has been large though work did not start until late in the season, and much dead work was necessary. Each company has stripped a large area to bedrock, and will start as early as possible in the spring.

UTAH.

(From Our Special Correspondent.)

Ore and Bullion Settlements.—The Salt Lake banks report the following settlements for the week ending October 11: Bullion, $236,550; gold, silver, lead and copper ores, $180,300, and gold bars, $70,700.

BEAVER COUNTY.

(From Our Special Correspondent.)

Horn Silver.—At the annual meeting in Salt Lake the following officers were elected: Allen C. Washington, president; Juan M. Ceballos, vice-president, and A. I. Harrison, secretary and treasurer. It is stated the reserve fund is near $100,000, as compared with $80,000 a year ago. This company shipped 5 cars of ore for the week closing October 11.

JUAB COUNTY.

(From Our Special Correspondent.)

Tintic Shipments.—For the week ending October 11 the following mines report shipments: Uncle Sam, 7 cars; Gemini, 13 cars; Grand Central, 5 cars; Bullion Beck, 8 cars; Mammoth, 9 cars; Eagle & Blue Bell, 23 cars; Centennial Eureka, 14 cars; Lower Mammoth, 2 cars; Alaska, 2 cars; Dragon, 27 cars.

Eagle & Blue Bell Company.—The old board of directors was elected at the annual meeting. The report showed the indebtedness of the company to be $5,000, with ore at the samplers, reducing it to $3,000. Some good bodies were opened during the year, and the mine was run on a profit of $4,589.

Godiva Company.—This company intends to explore Godiva Mountain to a depth of 1,500 ft., and the shaft is down now 900 ft. It is thought better ores will be found at depth.

Lower Mammoth.—Connection has been made with the ore-bearing channel on the 300-ft. level at this Tintic property.

Victor.—It is stated that 18 in. of rock, assaying $129 per ton, has been cut, carrying copper and silver values. The strike is in virgin ground.

SALT LAKE COUNTY.

Kenebec Mining Company.—This company is organized to operate in the old camp of Alta. It is capitalized with 400,000 shares, of the par value of $1 each, one-half going into the treasury. W. J. Craig and S. M. Levy are the promoters. C. W. Bennett is president; W. J. Craig, vice-president; John W. Donnellan, treasurer; Albert W. Casey, secretary; these, with George H. Robinson, S. M. Levy and Willard F. Snyder, composing the board of directors. The company's possessions include the old Reed & Benson ground.

(From Our Special Correspondent.)

Alta Shipments.—The Lavinia, Native Copper and the Flagstaff each sent out a car of ore for the week ending October 11.

Bingham Shipments.—Highland Boy, 2 cars; United States, 1 car; Columbia, 3 cars; Honest Abe, 1 car; Sampson, 1 car; Ben Butler, 2 cars; all for week ending October 11.

Dalton & Lark.—The main tunnel on this group of the Bingham Consolidated group is being pushed to connect with the porphyry and lime contact, freeing the ore bodies on the upper levels of water and allowing the production to begin.

SUMMIT COUNTY.

(From Our Special Correspondent.)

Park City Shipments.—The Daly West shipped 2,778,190 lbs. of ore; the Ontario, 354,868 lbs.; Anchor, 336,470 lbs.; California, 716,500 lbs. concentrates; Silver King, 1,500,000 lbs.; Silver King Crescent lease, 37,020 lbs.; Daly-Judge lease, 51,020 lbs., during the week ending October 11.

California.—The concentrator is now running with double the former capacity.

Naildriver Company.—The capital stock of this new company is 600,000 shares of $2 par value. It will work in the Uimtah District of Summit County and the Blue Ledge District of Wasatch County. The officers are: Chas. L. Rood, president; S. H. Lewis, vice-president, and W. R. Wightman, secretary.

New York Bonanza.—Contracts have been awarded to the Salt Lake Hardware Company for 2 85-h. p. boilers, a 12 by 14 band friction hoist of 1,200 ft. capacity, a cross-compound steam and cross-compound air compressor of 5-drill capacity, ore cars, cages and other supplies, the entire outfit to cost about $15,000. Manager Wilson expects to tap the Naildriver vein within schedule time.

Ontario Miners vs. Daly West Company.—Three claims have been filed against the Daly West Company by M. M. Regan, J. Killran and Steve Lawless, for injuries received at the time of the explosion. The company was surprised by the action. Each suit is for $10,200.

TOOELE COUNTY.

(From Our Special Correspondent.)

Stockton Shipments.—For the week ending October 11, the Ophir Hill sent in 1 car concentrates, and the Utah, of Fish Springs, 1 car.

Galena King.—This Stockton property has been inspected by the new officials, who will continue work above the water level. The company is a contributor to the Honerine drainage tunnel.

WASHINGTON.

FERRY COUNTY.

(From Our Special Correspondent.)

Independence Group.—This group at Park City comprises the Independence, Columbia, Capitol, Monitor and Manila claims. On the Capitol is a 50-ft. tunnel. Assays run from $2.18 to $70.36, the principal values being silver and copper.

Little Ruby Placer.—Four men are repairing the flume.

Sheridan Camp.—On the Stemwinder, 125-ft. level, a drift has been advanced 12 ft. on the vein, 12½ ft. wide. The Sheridan Mining Company is doing annual assessment work on the Polar Star group. The Hornet Gold Mining Company will do only assessment work on the Liberty and Hornet claims. The Helphrey Brothers, of Curlew, own the Little Chester and Little Ned, but will do only assessment work. Work

on the Pasco and C. E. Nye claims is still in progress with satisfactory results.

OKANOGAN COUNTY.

(From Our Special Correspondent.)

Geological Survey.—The topographical work of the United States Geological Survey, in charge of L. C. Fletcher, west of and adjoining the Republic quadrangle, will be finished in 2 weeks, weather permitting. Next year the work will be continued to join that done on Lake Chelan.

Hayseed & Haymaker Group.—The owners, Schmelling Brothers, of Bodie, have interested some Michigan people in this group of 12 claims, reputed to be valuable in copper principally. An incline shaft is to be sunk.

WEST VIRGINIA.

HANCOCK COUNTY.

Options have been secured on 8,000 acres of valuable coal lands across the Ohio River from East Liverpool by Frank McElfresh, of New Cumberland. It is said that New York capitalists are interested. Most of the land is in the southern part of the county.

FOREIGN MINING NEWS.

AUSTRALIA.

QUEENSLAND.

Mount Morgan Gold Mining Company.—This company reports for the month of August a total of 20,482 tons of ore treated by chlorination, the yield being 12,665 oz. gold; an average of 0.62 oz. to the ton.

WESTERN AUSTRALIA.

The gold output for September is reported at 188,168 oz. crude. This makes for the 9 months ending September 30 a total of 1,596,103 oz. crude, against 1,360,841 oz. in the corresponding period of 1901; an increase of 235,262 oz., or 14.7 per cent. The total this year was equal to 1,371,654 oz. fine gold, or $28,352,086.

CANADA.

ALBERTA.

(From Our Special Correspondent.)

The Golden Spike, on the line which connects the Great Northern Railway with the Fernie coal mines, has been driven at Morissey. The branch of the Great Northern runs north from Jennings across the Canadian line to the Crows' Nest coal fields. Butte alone is expected to use something like 1,000 tons per day of Crows' Nest coal.

BRITISH COLUMBIA—BOUNDARY DISTRICT.

Boundary Mines.—About 70 men are now employed at the B. C. mine, which is shipping an average of 130 to 140 tons of ore a day to the Boundary Falls Smelter. This ore is being mined in the old workings. A prospect shaft is being sunk on the south end of the B. C. The Emma continues to ship ore on a small scale to the Hall Mines Smelter at Nelson, giving employment to 7 or 8 men. The Jewell is still shut down.

MEXICO.

CHIHUAHUA.

(From Our Special Correspondent.)

La Morena.—The bonanza opened on the 7th level last January continues productive, the ore carrying 45 oz. silver. Water has been encountered at the 9th level.

Palmilla.—The highest grade ore yet struck has been opened at 160 m. The best of this ore is reported worth from $30,000 to $40,000 (Mexican) per ton. Don Antonio Ortiz, operating on the north end of the Palmilla Mine under a lease from Pedro Alvarado, has struck 2 m. of 90 oz. ore on the 135-m. level of the Las Virginias workings, and is shipping 500 tons per month.

Presina.—This mine, of the Hidalgo Mining Company, at Parral, has been drowned owing to the breaking down of pumps, all works below the 5th level being under water.

San Antonio de Caldas.—This Parral mine, operated by Jose Ma Botello, situated immediately north of the Palmillo Mine, is extracting 600 tons per month of ore, ranging from 30 to 60 oz. silver.

San Juanico.—This mine at Parral is maintaining an output of about 300 tons per month of ore, averaging $70 (Mexican) in silver, and $60 (Mexican) in gold per metric ton.

Veta Colorado.—The experts examining the various mines along the Veta Colorado for the Guggenheim Exploration Company have completed their work, Edward Doer, general superintendent in Mexico for the Guggenheim Company, having gone to New York City recently. The following properties are involved in the proposed deal: La Presena, La Morena and La Esperanza, owned by the Hidalgo Mining Company, of Pittsburg, Pa.; La Veta Grande and La Verde, owned by J. M. Botello, of Parral; Quebradillos, owned by E. H. Townsend, of Akron, O.; Los Muertos, owned by Juan Almanzan & Co., of Parral, and Las Cruces, La Cabadena, La Covena, San Juanico, Las Guijas, Los Hilos, La Luz, Las Animas and La Presa, owned by the Hidalgo Mining Company. In addition to the above the Parral & Durango Railroad, the 2 lixiviation plants of the Hidalgo Mining Company, and extensive timberlands of the Parral and Durango Railroad would by the deal pass into the hands of the Guggenheim Exploration Company. About $5,000,000 in gold is involved in the deal by which the Guggenheims would secure control of an output of about 8,000 tons siliceous ore per month. Parral is the most important siliceous ore camp in Mexico, producing about 24,000 tons per month. Mining men think the consumation of the deal will be a great benefit to the camp, as most of the mines involved have been worked on antiquated lines for the last 8 or 10 years, and it is believed that the Guggenheims will open up deep levels and mine on a much larger scale and in more modern lines.

DURANGO.

(From Our Special Correspondent.)

Vacas.—It is reported that further litigation is under way over the ownership of these mines. B. Clark Wheeler, the interventor appointed by the Mexican courts in the recent law suit, is said to have begun proceedings in the Colorado courts to prevent Mrs. Mary D. Grace and others from taking from escrow a large block of stock which he claims under a contract. Under the provisions of which he was to free the property from legal entanglements and pay to the Grace faction $250,000, when the stock placed in escrow was to become his.

MINING STOCKS.

(Complete quotations will be found on pages 536 and 537.)

New York. **Oct. 16**

The speculative atmosphere is still hazy, although buying is credited to the supporters of copper shares. A slightly better feeling, however, is noticeable since Amalgamated and Anaconda have declared their dividends, but it may be some time yet before investors will come into the market. Stock prices are noticeably lower than they were a year ago. In fact, few stocks can hold their own in the present market.

In the copper group sales are in comparatively small lots at prices somewhat better than last week. Amalgamated was strengthened by the ½ of 1 per cent quarterly dividend, rising from $62⅛ to $66. This makes 2½ per cent, or $3,847,196, declared in dividends this year, which is a good deal less than last year and 5½ per cent less than was promised when the company was floated. This reduction in profits resulted from smaller earnings on stock which Amalgamated holds in other companies. One of these, Anaconda, which for years paid 16 per cent and over annually, has now declared a semi-annual dividend of only 50c., or at the rate of 4 per cent per annum. Anaconda stock this week was traded in at 95@101 per cent ($23.75@$25.25). On curb the market is narrow, brokers representing insiders being in possession of the favorite securities. Greene Consolidated, of Mexico, is the most active, yet its quotations seldom fluctuate beyond a certain margin, and this week were $25@$24. Tennessee experienced a limited demand at $16⅜@$16⅞, as holders are awaiting further developments on the property. British Columbia, while showing steady prices, sells only in small lots around $6.75. Montreal & Boston does little at $2.50@$2.25. Union, of North Carolina, is uninteresting, bringing $3@$2.75. United, of Montana changed hands at $30@$29.50.

Bamberger-De Lamar Gold, of Nevada, reappeared with small sales at $10.50@$11, and Santa Fe Gold and Copper, of New Mexico, at $1.75.

Of Ontario Silver, of Utah, an old lot sold at $9, while 800 shares brought 50c. less.

In the Colorado list Portland was the most hopeful, as it resumed its 3c. quarterly dividend, after an absence of 6 months. This property has yielded in dividends $4,297,080 since its opening, which is a return of over 143 per cent on its capital stock, and places it among the best paying gold mines in America. This week 300 shares sold at $1.75, ex-dividend, and later 100 shares brought $1.76, which compares with $1.90 last week. The drop of 14c. is due essentially to the depression in the Western market. Elkton and Isabella are selling at a difference of only 2c. in favor of the former. Acacia shows renewed strength, selling at 67½c.

The Comstock stocks are almost a dead issue, excepting that Consolidated California & Virginia and a few others are still held in the East, especially by room traders. Prices are generally weaker in line with another crop of assessments.

Boston. **Oct. 14.**

(From Our Special Correspondent.)

Up to to-day the mining share market has been the usual desultory one, with trading very much restricted and little or no interest manifested in going prices. A spurt of 2.37½ in Centennial Mining to $18.37½ one day last week bore the ear-marks of Lawson, which was said to be Standard Oil buying. Subsequently, however, the stock drifted back to $16.25, but has recovered to $18.25, at which price it closed to-night. There has been no news to account for the activity, and the movement is entirely unexplained. Dissatisfied stockholders of Mass Mining have been letting go of long stock, which was reflected in a drop of $3.25 in the price, to $12.75. It has recovered to $14.25 in the meantime. The management is being censured for too much loud talking and a failure to show results that have been promised.

Rumors are current from New York that the selling price of copper will be advanced, which has had a wonderful stimulating effect on copper shares. It was reflected in the greater part of the list, but small as it is it is welcome to a long suffering public. Old Dominion has been dormant, but to-day the price ran up $1.25 to $17.25. President Smith has just returned from the property, and is very optimistic in his remarks. A new shaft will be sunk, and a reduction in freight rates is being sought for from the railroad people. Mr. Smith estimates that economies will be introduced when the mine resumes operations, which will reduce the cost of production about 1½c. per pound. A suit has been brought in the local court to recover 60,000 shares of Old Dominion stock from the Bigelow party, which originally managed the property. The bill as filed makes some sensational accusations.

Copper Range Consolidated has fluctuated from $56.75 to $59, but in the main is a very buoyant stock. It is remarked that this stock is in much the same position that Boston & Montana was when it advanced from under $50 to above $100 in 1895. Its earning capacity was then being demonstrated. The strength of Amalgamated Copper through this last stock market disturbance is remarked. A $3 advance to-day was well taken, and sentiment here is bullish on the stock. No change is looked for at this time in the dividend rate.

United States Mining has varied, from $20.50 to $21.50. Dominion Iron and Steel touched $46.75 last week, but recovered to $57, closing at $55.25 to-night. Both Montreal and Toronto were buyers on the decline, and a part of it was for cash. Brokers, as a rule, are requiring cash for this stock as well as for Dominion Coal. The latter broke to $119, but rallied to $131 subsequently, yielding to $126 later. This company has booked large orders for coal in New England at prices as high as $6 per ton. Net earnings the first 6 months this year were over $1,000,000 upon an output of 1,527,000 tons of coal.

Adventure has stiffened $1.75 to $19.75. The second head at this company's mill has gone into commission. Lawson's Trinity has spurted, $1.75 to $11.75, with nothing said to account for the advance. Atlantic broke $4 to $21, but has recovered to $22.50. The issue of the additional stock to make up the full quota of 100,000 shares naturally affects the market price. Calumet fell $15 to $505, but soon recovered. A slight selling movement caused a setback to Rhode Island Mining shares to $1.75.

Colorado Springs. **Oct. 11.**

(From Our Special Correspondent.)

The mining stock market on the whole presented but little change from last week, unless it was that prices were a trifle weaker. This was due to the apprehension felt over the declaration of the Portland dividend. This company suspended payments in April last, skipping two quarterly disbursements of $180,000 each; and it was generally supposed that the fall dividend would be passed, but the directors, at their meeting on Monday, voted to declare a dividend of 1c. a share a month, or 3c. for the quarter, making a disbursement of $90,000 to be paid October 15. This action did not have the effect of bettering the market, as, correctly or incorrectly, the reduced dividend was taken to mean the inauguration of an era of smaller profits. Such a conclusion is unwarranted, when it is recalled that the company is still making payments on its mill, which has cost up to this time $750,000. The Mary McKinney Company declared its regular quarterly dividend of 1c. a share monthly, or 3c. for the quarter. The impression was out that this company would reduce its dividend on account of the water situation, but the fears were groundless, and a disbursement of $30,000 was made October 10.

Portland shares weakened this week, in line with what has been said above. They opened at $1.90, held steady for a day or two and immediately after the dividend weakened to $1.85, closing at $1.85@$1.87 to-day.

Vindicator opened the week at $1.05, but dropped to $1.03¼ on Wednesday, in keeping with the gener-

ally weak market, recovering to-day to $1.05. Pharmacist, which was the first Cripple Creek company to pay a dividend, in 1892, is again coming to the front. A strike by one of the lessees caused the stock to advance from 4¾c. to 6c.; it dropped back to 5c., selling up to 6¼c. again to-day. Elkton strengthened perceptibly this week, selling from 33½c. to 35c., but breaking down to 32c., recovering to 33½c., with closing quotations of 33c. bid with 34c. asked. The internal fight among the directors is still militating against the progress of this property, as one element desires the mine to be closed down indefinitely, and another is in for putting the big pumps at 900 ft. and clearing the 8th level of water.

El Paso opened the week at 73c., but weakened to 70½c., recovering to 71c. Gold King is selling around 50c., but being practically a close corporation does not figure strongly as a market feature. Gold Dollar Consolidated sold at 4¼@4⅛c.

Salt Lake City. Oct. 11

(From Our Special Correspondent.)

General market tone this week has been unsteady, with an upward tendency. The stocks that lost ground last week have in the main recovered, while others have lost. There was an apparent interest in many of the Park City companies. The Wabash last week showed limits of $2.44 and $2.31, and this week $2.30 and $1.90, with sales of 12,533 shares. Comstock registers $1.22½@$1; sales of 4,000. California stands steady, closing with about the same limits of variation as last 42½@33c., with sales of 67,355. Daly West shows sales of 205 shares at $50.20 @$49.70; lower than last week by 30c. Daly-Judge also retreated a little in limits, selling 1,895 shares at $10.12½@$9.75 Of the Tintic properties Ajax has advanced a little, 9,000 shares coming out on calls at 38@33c. Grand Central has dropped to $5.40@$5.15. Lower Monmouth remains steady at $1.40@$1.31, with these prices calling out 6,310 shares. May Day opened on Monday at 30@23c., and advanced to 34c. at closing; 110,500 shares were dealt in. Uncle Sam sold at 32@30c., calling out 4,951. Victor retreated to 29 @24½c., this bringing out 11,400 shares. The Majestic of Beaver County sold 2,600 shares at $3.20@ $2.95. Consolidated Mercur sold as low as $1.92½ and as high as $1.99½, these prices bringing out 12,350 shares. The total sales of the week were 393,539 shares, the total value being $213,836.

San Francisco. Oct 11

(From Our Special Correspondent.)

Business has been a little better this week. The low points which quotations of most stocks have reached seemed to attract buyers. More orders to purchase made their appearance, and this resulted in a firmer tone.

Some quotations noted are: Consolidated California & Virginia, $1@$1.05; Ophir, 90@92c.; Caledonia, 90@91c.; Mexican, 23c.; Sierra Nevada, 17c.; Best & Belcher, 12c.; Potosi, 7c.; Gould & Curry, 6c.

The monthly record of the sales on the Oil Exchange since January 1, 1902, is as follows:

Month—	Shares.	Value.
January	187,584	$81,033
February	288,562	76,447
March	214,293	109,364
April	442,231	239,938
May	213,483	185,594
June	110,435	54,140
July	53,165	35,832
August	69,193	57,207
September	50,856	40,802
Totals	1,629,802	$780,877

The Producers' Oil Exchange has gone out of existence and the members have reorganized under the name of the California Stock and Oil Exchange. The new board commences business under very favorable auspices to deal in all kinds of stocks and bonds, except mining shares. A feature of the new organization is a daily call list of a number of unlisted securities, which are generally dealt in by investors in securities. The sessions are at 10:30 a. m. and 2 p. m. daily in the assembly hall, ground floor, of the Mills Building, and are freely open to the public. The directors have adopted a schedule of commissions as follows: On orders under $5 a rate of 3.1c. per share, over $5 and under $25, it is 6.25c. per share, and for $25 and upward 12.5c. per share. Commissions on oil stock purchases and sales are as heretofore. On United States bonds the commission is $1.25 per $1,000, and on miscellaneous bonds $2.50 per $1,000. On Wednesday, October 8, the newly organized Exchange held its first session and quite a number of sales were recorded.

London. Oct. 3.

(From Our Special Correspondent.)

There is a wearisome monotony about my reports on the London mining stock market. Week after week goes by with no movements or openings in new directions to report, and probably your readers are as tired of reading my letters as I am of writing them. This week there have again been many causes for depression in South African shares, but most of them are the old ones relating to labor supply, unsettlement of the country, etc. Last week I mentioned that the market was much upset by the claim made by the income tax commissioners for tax on the whole of the profits of the De Beers Company. I mentioned that hitherto the company having its headquarters in and being registered under the laws of Cape Colony had paid this tax only on the dividends distributed in England. I have since investigated the case of the income tax commissioners and find that their claim is based on the fact that though the head office is at Kimberley and the London office is apparently only a branch office, yet the real direction is in the hands of people domiciled in England. During Mr. Rhodes' life the direction of the company was undoubtedly in Cape Colony, as Mr. Rhodes was the head of the concern, and his home was in South Africa. Since his death things are somewhat different. Mr. Beit is the head of the company, and his domicile is just as certainly London. His office is in Bishopsgate Street, and his house in Park lane. In looking through the list of directors it is surprising to find what a large proportion are domiciled in England. In theory, therefore, the income tax people have a considerable amount of right on their side, though to what extent the courts will uphold their claim when considering the exact letter of the law is uncertain.

Another cause for depression this week is the circulation of reports that the Government intends to take over the Chartered Company and administer Rhodesia as a Crown colony. It will be remembered that after the Jameson raid the administration of Rhodesia was taken over by the Government, and the Chartered Company since then has been a purely trading concern. The death of Mr. Rhodes has no doubt had considerable influence on the colonial office with regard to the future of Rhodesia. There is no suitable successor to him, for Dr. Jameson exhibited a want of judgment by his raid, and Mr. Beit is not an Englishman by birth or education. It is felt that the time has come when the landed possessions of the company should be in the hands of the Government, and not in those of a private trading company. Although the information we obtain relating to the intentions of the Government is only gossip and hearsay, there can be hardly any doubt that the change will be made before long. The most difficult question will be the buying out of the shareholders. There are 5,000,000 shares of £1 each, a large proportion of which were allotted at 100 and 200 per cent premium, and as at one time the shares stood as high as £5, many holders must have paid high prices for their shares. On the other hand no dividend has ever yet been paid. If the Government buys out the shareholders the probable scheme would be to exchange shares for Government stock calculated at the rate of £1½ for each £1 share in the company, the Government stock bearing 3 per cent interest. The shareholders would thus get a safe investment instead of a speculation, and on the whole shareholders would not object. The share register numbers over 40,000 names. There are also £1,250,000 debenture bonds, but these can at any time be paid off at six months' notice.

Another way of scaring the life out of shareholders in South African shares is the revival of the Mac Arthur-Forrest cyanide patent question. The African Gold Recovery Company, which owned the South African patents, has already lodged a petition to the new Transvaal High Court for the reopening of the case, which was dismissed by the old court in 1896. Previous to the last named year the process was worked on a 6 per cent royalty basis, but since then, of course, the process has been free. The reason the company is reviving the suit is that the English courts held that the patent was valid for weak solutions of cyanide, and as the Transvaal is now an English colony they hope the decision will go into line with the English one. If the decision was reversed there would be six years of arrears to pay, which would seriously injure the mines, so it is probable that the present court will find no cause for alteration, basing its reasons on the actions of most of the Australian colonies. The patent has not long to run in the Transvaal, so it is only past royalties that would worry the companies. Anyhow, the lodging of the petition itself is enough to cause much uneasiness in the mining market.

COAL TRADE REVIEW.

New York, Oct. 11.

ANTHRACITE.

The anthracite strike is virtually over, and already press dispatches tell of men who have been working in bituminous mines returning to the anthracite region—a sufficient commentary on the stories of underpay and intolerable conditions at the anthracite mines that have been heard during the strike. That the operators have changed front and consented to arbitration is due to the pressure of public opinion, the checking of industrial enterprises through high fuel costs, a stock market unsettled by the strike, with financiers known to be opposed to the anthracite interests using the strike as a weapon in the market, and, lastly, to threats of hostile legislation by politicians. Had the operators made the most of their opportunities and conciliated rather than estranged public sympathy by adopting a reasonable rather than a dictatorial attitude in their statements, the strike would probably have been settled on their own terms before this.

The weather during the week has not been unseasonably cold, and the situation at points where anthracite is the principal fuel, though acute, has not been grave. It is altogether likely that with the miners returning to work next week production will run up rapidly and by December enough coal will be coming forward to supply all pressing needs and prices will be back to pretty nearly the regular winter figures, though retail prices may still be higher than usual at many points, since the operators will naturally supply their most important markets first. The daily production of the mines and washeries is now about 43,000 tons.

As supplies of anthracite all over the country are down to about the lowest point known, very little coal is changing hands. In Lake Superior territory the market is bare, and the important question is how much coal, with poor car supply, can be got to the lower lake ports before navigation closes. In Chicago territory the demand has been active and all kinds of coal are wanted. The closing of navigation will be of less importance here, as a heavy tonnage will undoubtedly arrive by rail during the winter. Along the lower lakes the situation has shown little change during the week. Buffalo enjoys the distinction of being a city where prices have advanced comparatively little, owing to the Erie continuing to sell 100 tons daily to retailers. This amount, though small, has been supplied so regularly that it has kept the market from running away. Along the Atlantic seaboard the very highest prices are no longer asked, as it is realized that as soon as the strike is declared off the railroads will rush forward whatever coal they have held up to supply their own needs and prices will tumble quickly. We note these retail prices at various points: Louisville, Ky., $12; Saginaw, Mich, $10; Kansas City, Mo., $12; Milwaukee, $15; Chicago, $15@$16; Boston, $20; Newport, R. I., $20. At New York domestic sizes have sold for $18@$25; pea, $10; buckwheat, $8; rice, $6.

Note of the Week.

At the annual meeting of the Reading Coal and Iron Company the old directors and officers were reelected, as follows: President, George F. Baer; directors, George C. Thomas, John Lowber Welsh, Henry P. McKean, H. A. Dupont, Charles Steele and Joseph S. Harris; treasurer, W. A. Church, and secretary, W. R. Taylor. The annual meetings of the following companies subsidiary to the Reading Coal and Iron Company were held: Fulton Coal Company, Locust Gap Improvement Company, Fremont Coal Company, Mammoth Vein Coal and Iron Company, Trenton Coal and Improvement Company, and the Delaware Coal Company.

BITUMINOUS.

The Atlantic seaboard bituminous trade has been decidedly quiet during the week, its particular feature being a lack of urgent buyers at the higher prices. This and the prospective settlement of the anthracite strike caused prices of speculative coal to fall within the last few days from $8 to $5.50@$6 per ton, f. o. b. New York Harbor shipping ports. The situation is still apparently in the control of the railroads. Car supply has been very poor all the week, the total number received at the collieries ranging around 35 and 40 per cent of the number wanted. The railroads continue to allege lack of motive power as the reason for the poor supply. The drop in speculative prices has stopped importations of English and Scotch coal, though considerable Canadian coal is believed to be reaching points beyond Cape Cod. The arrivals of English and Scotch coal have shown that there is as great a diversity of grades abroad as here, some of the coal received being pretty poor stuff. North of England coal has been offered at $7.50, f. o. b. ship New York Harbor and less. A large number of industrial concerns have notified producers and middlemen that when the price of Clearfield grades gets down to $4.50, f. o. b. New York Harbor shipping ports, they will be in the market again. Generally speaking, the trade has got over its hysteria of the past two or three weeks and the outlook favors still lower prices. Seizures of coal by the railroads, for which the latter pay only the mine price, continue to cause some inconvenience to operators.

In the far East buyers are waiting for prices to drop before purchasing heavily, and the demand for speculative coal is much diminished. Producers are closing up shipments to the shoal water ports as fast as possible. Trade along Long Island Sound is taking all the coal it can get on contracts, but is not as eager for coal at speculative prices as last week. At New York Harbor points likewise the demand is quieter, and people having contracts are receiving a fair proportion of the amounts due. The all-rail trade is

short of coal, except concerns having large storage capacities, and, generally speaking, those dealers who have had coal shipped are able to make some profit.

Car supply at the mines has been poor and unreliable. Transportation to tidewater has been slow, cars coming through in a week or 10 days and in some cases taking two or three weeks. In the coastwise vessel market the larger craft are in fair supply at the lower ports, while few small craft are to be had. At New York Harbor small craft are in better supply, and apparently vessels that have been delayed by fogs are now arriving at the loading ports. We quote current rates from Philadelphia as follows: Providence, New Bedford and Long Island Sound, 60@65c.; Boston, Salem and Portland, 65@70c.; Wareham, 70c.; Lynn and Newburyport, 80@85c.; Bath, 75c.; Bangor and Gardner, 90c.@$1, with towages to latter port. From the farther lower ports rates are 15@20c. higher than above, and from New York Harbor ports 10@15c. higher.

Birmingham. Oct. 10.

(From Our Special Correspondent.)

The coal market is in excellent condition, and prices are strong. The demand seems to increase for steam as well as for domestic coal. All mines in this district, except those of the Tennessee Coal, Iron and Railroad Company, where a strike is on, are running at their fullest capacity. The chief difficulty experienced in handling the business seems to be still the matter of scarcity of cars. A number of new cars have been brought in this territory, and apparently every effort has been made to relieve the situation without avail. Now that the mines of the Tennessee Company are not all going, the other mines may get a few more cars. Inquiries for coal are now coming in from the Eastern States, and good prices are being offered.

There are now about 4,200 miners employed by the Tennessee Coal, Iron and Railroad Company at Pratt City, Blocton, Blue Creek, etc., out on a strike. The cause of this strike was explained last week. About the only place at which the company is attempting to work its mines is at Johns, in the Blue Creek region, where it is getting out some coal.

At a conference between the miners and the officials of the Sloss-Sheffield Company to-day, results in a satisfactory agreement, whereby it is decided that there will be no strike at the mines of this company.

Coal mines have been opened up at Schuler, near Bessemer, and a branch of the Birmingham Mineral road will be completed to the place within a few weeks. The Schulers have already let the contract for the erection of 300 coke ovens, to be constructed on these properties at Virginia or Schuler, and the work will be pushed.

The Empire Coal and Coke Company will erect 100 coke ovens at its plant at Empire, Ala., and they are to be completed by February.

Chicago. Oct. 14.

(From Our Special Correspondent.)

Illinois and Indiana coal continues to be that sold for the most part in the Chicago wholesale market, though Eastern grades are coming forward slowly. There is a little Hocking to be had at $5@$6, and Maryland coal is still in the market. Transportation is greatly deficient for furnishing the West with the products of all Eastern mines, and promises to be still more deficient as the winter comes on. Business, however, is booming; large orders are being taken constantly for Indiana and Illinois at $3@$3.50. Retailers throughout the Mississippi Valley appear to have come to the conclusion that there is no prospect of getting anthracite or the better grades of Eastern coal for their winter trade, and are stocking up with Western bituminous. Smithing coal continues to be very scarce and is quoted at $6. Kentucky cannel coal is selling very well at $7@$8, when obtainable, which is not the case constantly.

Retail prices of bituminous coal have advanced greatly, and there is much complaint from the press and consumers. The advances seem to be larger than is warranted by the wholesale prices. One feature of the situation promises permanent betterment of the market for Western coal—there have been such improvements made in stoves and furnaces for burning bituminous that it is probable that many users of coal will be permanently satisfied with bituminous hereafter. Chicago dealers do not look for any substantial supply of anthracite for three months after mining shall be resumed, it being expected that the East will get the first products of the re-opened mines. Lake navigation will close in a month, and there is no possibility of getting the usual supply by water.

Cleveland. Oct. 14.

(From Our Special Correspondent.)

After all that has been said about the coal movement by the lakes this summer, the figures which have been presented as to the commerce through the Sault are rather surprising. The statement is that the bituminous shipment to date has been 3,455,608 tons as against 2,896,483 during the preceding season. This indicates that the increased movement of coal has been about in that proportion which it was hoped at the beginning of the year to establish. The shortage of coal at the head of the lakes is nevertheless as severe as has been predicted heretofore. This is explained by the almost complete absence of a movement of anthracite coal. Since the soft coal must take the place of the hard coal it is accordingly scarce as compared with the need. The movement of bituminous coal has seemed less because of the great abundance of ships during the entire season with which to move the material, the soft coal ports being called upon to keep all of the coal tonnage employed. It is apparent now that the movement is falling off perceptibly and that the season's work is beginning to sag. It is a question whether or not the gain will not have been completely lost by the end of the year. During the week that has just closed the Massillon producers announced a horizontal advance of 50c. a ton on their output, which followed a similar announcement on the part of the retail dealers of Cleveland. The prices on the retail market here are now almost double what they were in the spring and are fully 66 per cent higher than they were a year ago. The supply, however, seems abundant if there were cars enough with which to move it.

Pittsburg. Oct. 15.

(From Our Special Correspondent.)

Coal.—Conditions this week, so far as railroad transportation facilities are concerned, are as bad as last week, with no indications of improvement. The coal companies of the district have not received 50 per cent of the railroad cars needed. It was admitted by the Pittsburg Coal Company, the railroad coal combination, that the production for the past eight weeks has been less than 50 per cent of the capacity of the mines. The company will be far behind in its shipments to the Northwest when the lake navigation closes. A prediction is made that the prevailing high prices will continue throughout the winter. A rise in the rivers enabled the Monongahela River Consolidated Coal and Coke Company to make a large shipment on Monday and yesterday. From 7,000,000 to 8,000,000 bush. of coal were sent to the lower markets. There is still a heavy tonnage loaded and ready to go out. The rise was only temporary and the last boats to leave may have some difficulty in reaching Cincinnati.

Connellsville Coke.—The shipments fell off nearly 1,000 cars, while the production was about the same as the previous week. It is impossible to quote prices, as the highest rates ever paid for coke are now being offered. The *Courier* in its last issue reports that 256,216 tons were produced, a decrease of 293 tons compared with the production of the previous week. The shipments aggregated 10,870 cars, distributed as follows: To Pittsburg and river tipples, 3,850 cars; to points west of Pittsburg, 5,290 cars; to points east of Connellsville, 1,730 cars. This was a decrease of 941 cars.

San Francisco. Oct. 11.

(From Our Special Correspondent.)

The coal market continues quiet and without special change. The supply is sufficient to meet all demands.

Prices.—Current prices for Coast coals to dealers are as follows: Wellington and Southfield, $8; Roslyn, $7; Seattle and Bryant, $6.50; Coos Bay, $5.50; White Ash, $5. For Rocky Mountain coals, large lots, quotations are: Castle Gate, Clear Creek, Rock Springs or Sunnyside, $8.50; Colorado anthracite, $14. For Eastern and foreign coals, cargo lots, prices are: Pennsylvania anthracite, $14; Cumberland, $12; Welsh anthracite, $13; cannel, $9; Brymbo, $7.50; Wallsend, $6.50.

Foreign Coal Trade. Oct. 16.

The immediate question in the market is now of imports, rather than exports. We noted last week that negotiations were reported closed for large lots of Northumberland steam coal in England, in addition to the orders for Welsh coal. These transactions have caused some excitement in the English market, with a rise in prices. Taking current quotations abroad, it would appear that after allowing for the British export duty of 1s. per ton, our own duty of 67c. and current ocean freights, coal from Newcastle can be brought to New York at from $5.25 to $5.75 per ton; to which must be added costs of unloading and delivery. Best Welsh steam coal would cost about $7 at current prices, with interior qualities ranging downwards to $5.

Freight rates are reported as advancing, and cargoes have been quoted as high as 8s. 6d. to New York or Philadelphia.

The shipment is reported of a large lot of German coke for the smelting works controlled by the American Smelting and Refining Company in Mexico. This coke is shipped by way of Rotterdam and Tampico. The ocean freight rate is reported at 11s. ($2.64) per ton.

Exports of coal and coke from Germany for the 8 months ending August 31 are reported as below, in metric tons:

	1901.	1902.	Changes.
Coal	9,799,499	9,957,903	I. 158,404
Brown coal (lignite)	14,649	14,016	D. 633
Coke	1,298,237	1,435,169	I. 136,932
Totals	11,112,385	11,407,088	I. 294,703

The largest exports this year were to Austria, Holland and Belgium.

Imports of coal and coke into Germany for the 8 months ending August 31 are reported as below, in metric tons:

	1901.	1902.	Changes.
Coal	4,108,380	4,069,277	D. 39,103
Brown coal (lignite)	5,390,170	5,133,974	D. 256,196
Coke	271,242	238,180	D. 33,062
Totals	9,769,792	9,441,431	D. 328,361

Of the coal imported this year 4,811 tons were from the United States, against 317 tons last year.

During 1901 a total of 297,026 tons of coal was imported into Uruguay, as compared with 315,485 tons in the previous year. Of these totals, 291,271 tons came from the United Kingdom in 1901, as compared with 311,312 tons in 1900, and 5,755 tons from the United States, as compared with 4,173 tons.

Messrs. Hull, Blyth & Co., of London and Cardiff, report under date of October 4 that owing to the strong demand from America for both large and small coal, the market is in an excited state. On account of the large amount of business done colliery owners have advanced their prices 1s. per ton over last week's quotations. Coals are now extremely difficult to obtain for October shipment. Quotations are: Best Welsh steam coal, $4.08@$4.20; seconds, $4.02; thirds, $3.84; dry coals, $4.02; best Monmouthshire, $3.48@$3.60; seconds, $3.42; best small steam coal, $2.46; seconds, $2.28; other sorts, $1.92.

The above prices for Cardiff coals are all f. o. b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f. o. b. Newport, exclusive of wharfage, but inclusive of export duty, and are for cash in 30 days, less 2½ per cent discount.

The general tone of the freight market is very steady, Mediterranean and Western rates are firm. Eastern rates are a trifle easier. Some rates quoted from Cardiff are: Marseilles, $1.20; Genoa, $1.20; Naples, $1.20; Singapore, $3.36; Las Palmas, $1.62; St. Vincent, $1.80; Rio Janeiro, $2.64; Santos, $2.88; Buenos Aires, $2.52.

IRON TRADE REVIEW.

New York, Oct. 16.

The fuel situation is the chief topic of discussion among producers at present. Deliveries of coke to furnaces continue to be made very irregularly and the output is suffering accordingly. Many furnaces are already behind their engagements, and it will be, apparently, impossible for them to catch up.

The railroad congestion is also affecting deliveries of materials from furnaces and mills. Serious delays are reported everywhere, with resulting embarrassment both to producers and consumers.

The situation is well shown in our local letters, which follow.

Birmingham. Oct. 10.

(From Our Special Correspondent.)

The iron market remains strong, and conditions as regards prices and future demand are practically unchanged. The furnaces are pretty well sold up for the first half of next year, and some of them are out of the market, and will be out for several months. The shipments from the district are very heavy; all iron is going out as rapidly as cars can be obtained. A few shipments are still being made on old contracts, but very few; most of the iron going from the district now is bringing a good round price. It is almost impossible to get spot iron at any reasonable price. Consumers caught short do not hesitate to pay $25 per ton for iron, and many of them are glad to be able to secure it at all, even at this figure. Indeed it is understood that the matter has been seriously considered of importing foreign iron into the South, as has already been done in the North and central West. In fact, it was given out to-day that a deal had been consumated through Rogers, Brown & Co.'s local agency whereby a good shipment of iron would be made into this district during next month in order to relieve pressing demands.

The large charcoal furnace of the Southern Car and Foundry Company, at Gadsden, was blown in last week and is now making charcoal iron, all of which will be used, it is stated, in the several plants of the company. Mr. Elliott states that it is his intention to shortly begin the erection of another furnace alongside the present one.

A rumor is afloat to the effect that the United States Steel Corporation has made overtures to the Sloss-Sheffield Steel and Iron Company to obtain the holdings of the latter company at Sheffield and at Florence, Ala., and operate the several industries at

these points under one management, though no confirmation of the rumor can be had.

A bad fire occurred on October 9 at the Birmingham rolling mills, which is the property of the Republic Iron and Steel Company. The fire was caused by a spark in the machine shop, near the mill shears, and the flames made rapid progress until two of the buildings had been totally destroyed and another so badly damaged that it will have to be rebuilt. The loss will amount to upwards of $10,000. As a result about 150 men are idle in the bar mill, forge department and warehouse, though operations are going on as usual in the steel mill and No. 2 forge. A big force of men is at work clearing away the debris, and repairs will be made at once.

Buffalo. Oct. 14.

(Special Report of Rogers, Brown & Co.)

The most pronounced feature of the market is its inactivity. Demand for deliveries on old contracts continues without abatement, but new orders are not being considered at present. The very unnatural and unhealthy atmosphere which has surrounded the industrial situation recently has taken the enthusiasm out of most people. Without doubt the settlement of the coal strike will be both an actual and a sentimental relief to the whole business world. We quote for cash, f. o. b. cars, Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $25.75; No. 2, $25.25.

Chicago. Oct. 14.

(From Our Special Correspondent.)

Sales of pig iron continue light on account of the coke famine and its effect upon furnaces and foundries alike in curtailing the fuel supply. Coke is perhaps no scarcer than it was last week, but its price continues almost prohibitive—$12@$14. Even should the strike at the anthracite mines be settled soon, the prospects for winter are not bright for users of coke, considering that delays in transportation will be added to shortage of cars on the coke-hauling railways.

Quotations remain nearly the same as last week, today's being: No. 1 Northern, $23.50@$24; No. 2 Northern, $23@$23.50; No. 3 Northern, $22.50@$23; No. 1 Southern, $24.50@$25; No. 2 Southern, $24@$24.50; No. 3 Southern, $23.50@$24. These prices are for delivery next year, practically altogether in the second quarter of the year. For early delivery—which means within the year 1902—Northern and Southern alike bring $26@$27.50 for No. 2, with other grades in proportion. The situation as regards Southern has been one of uncertainty, because of strikes in the Birmingham District, but these are reported over for the most part and sales are consequently on a more definite basis. Rogers, Brown & Co. have still one furnace closed at South Chicago. Most local furnaces are running behind their orders; in some cases 60 to 90 days. The condition of things in neighboring cities is reported to be fully as bad as in Chicago as regards closing of foundries. To all appearances the trade cannot recover from the effects of the anthracite strike for three or four months, given an immediate settlement; while if the strike continues a general tie-up seems impending, as the East is drawing coke and foreign iron supplies, to the disadvantage of the West. In any event, representative men in the iron trade prophesy that there will be an advance of $3 to $4 over existing prices before the year 1902 is over.

Cleveland. Oct. 15.

(From Our Special Correspondent.)

Iron Ore.—A few sales of low grade ore are being made for delivery during the latter part of this year. Standard high grade ores have about been sold for this year. The prices have not changed from the former quotations of $4.25 for bessemer old range; $3.25 for non-bessemer old range and bessemer Mesabi; and $2.75 for non-bessemer Mesabi. The extent of the sales will indicate the amount of ore to be brought down this year. On the basis of sales to date, the shippers are pretty near through for this season, having but about 3,000,000 tons yet to be shipped. The movement down the lakes therefore is slackening some, with no change in the rates of carriage from 75c. from the head of the lakes, 65c. from Marquette, and 60c. from Escanaba.

Pig Iron.—The pig iron supply from the home furnaces has not increased for this year's delivery, and in fact the curtailment of production seems to indicate that the importations will have to be increased, especially if present tests of the material prove it to be available for use. The foreign prices are $25.50 for No. 1 Scotch delivered, $23.50 for Nova Scotia iron delivered. Quotations of domestic foundry iron for this year's delivery are out of the question. For the first half of next year No. 2 is commanding $23 at the furnace and for the third quarter $21. Bessemer is selling in small lots at $23 for this year's delivery, all of it coming from stock, and for $21.50 for delivery during the first half of next year. Basic iron is not quoted at all, as the producers are not on the market.

Finished Material.—All plates for delivery during the first half of next year have been sold up by the larger mills, and some of the consumers not having their full needs cared for by contracts placed with the larger mills are looking for a surplus among the smaller mills. These are refusing to make contracts, desiring to obtain the price current in the market at the time the steel is to be delivered. They look for an increase to 2.25c. by the first of the year and at present are having no difficulty in getting 2c. at the mills. Structural steel is still in good demand, with the stocks well run down, but with the small mills still able to make deliveries in fair time. Jobbers are getting from 2.50c. to 3c. out of stock, while small mills are getting 2.60c. at the mill for this year's delivery. They have sold no material at premiums into next year. The larger mills have some uncovered capacity for the first half and are taking orders steadily. Billets are in good demand, because importation has been stopped by a change in the rules governing the assessing of import duties, the ad valorem duty being assessed upon the delivered instead of upon the invoice price. The larger mills have some bessemer steel, but do not care to sell it, since it is being made over into finished material. The price is $30 Pittsburg. The sheet prices have not been changed, but the market is stronger, the increased demand having been brought about by the recent reduction. Sheet prices are based on the quotation of 3.10@3.25c. for No. 27 black sheets, one pass cold-rolled, out of stock. The bar market is steady, with no change of prices and no indication that one will be made soon.

Pittsburg. Oct. 15.

(From Our Special Correspondent.)

The production of pig iron continues to be greatly curtailed by the shortage of coke, and while the Valley furnaces have sold up for the first quarter and into the second, some heavy orders are being placed. Prices have stiffened considerably and the market is very strong. There are no indications of a decline until probably the last quarter of next year. From six to eight furnaces are banked, and the situation in the Valleys is much worse than a week ago. All sales made for delivery next year are at an advance over former prices. The United States Steel Corporation, so far as known, has not placed an order for its requirements in the second quarter. Its outside purchases are estimated at 50,000 tons a month. According to the sales reported during the past week or two, there will be but little iron available for the second quarter. Some of the new furnaces of the big steel combine will be blown in early in the year, but the product will not be sufficient to take it entirely out of the market. The furnaces will not be able to fill all the orders taken for this year's delivery and a large tonnage will go over into 1903.

The iron and steel markets are likely to be more seriously affected during the coming week by a lack of adequate transportation facilities than ever before. The present difficulty is not only with coal and coke, but in a number of instances a heavy tonnage of finished material is held up. Loaded cars are sidetracked at various points in the Pittsburg District, and the outlook is anything but favorable for their speedy movement. The termination of the strike in the anthracite coal region, which is looked for within a week, will make matters worse, as locomotives and cars will be rushed into the field to relieve the coal famine in the East.

The policy of the United States Steel Corporation to get business and keep its mills in operation is being carried out. The only dull lines in the steel industry are in sheets, wire and tin-plates. Some large orders have been booked by the American Steel and Wire Company since the reduction of $7 a ton in prices was made, and all the plants are in operation, with several months' work ahead. As a result of the cut of $5 a ton in the price of sheets the American Sheet Steel Company has closed a number of important contracts and the idle mills are resuming. The plant at New Philadelphia, O., and four mills of the Wellsville works were started on Monday. Unless an arrangement can be entered into with the Amalgamated Association of Iron, Steel and Tin Workers whereby the American Tin-Plate Company may be put in a position to accept the rebate export trade a serious cut in tin-plate prices is threatened. The combine has maintained a price of $4 a box for over two years. As indicated last week, a special convention of the tin-plate members of the Amalgamated Association has been called to consider the proposition. It will be held in this city on Monday. If the convention refuses to ratify the terms agreed upon by the scale committee in conference with the combine representatives, a price war may be expected in order to obtain business for the many idle mills of the tin-plate company. Independent manufacturers are opposed to the plan, contending that by reducing wages 25 per cent on export orders market conditions will be disturbed, as buyers will hold off in anticipation of lower prices. If there is to be a cut in prices they want it to come now. Representatives of the combine and independent manufacturers, it is understood, have been invited to attend the workers' convention and express their views on the subject to the delegates.

At the meeting of the plate pool in New York no action was taken on prices, tank plate remaining at 1.60c. No sales are being made at that figure except by the United States Steel Corporation, and it cannot make deliveries this side of April 1. The independent mills are taking orders for earlier shipment at 1.85c. and a higher price is asked for prompt shipment. Some large orders have been placed within the past week, and there is a heavier tonnage on the books than ever before. A strong demand for structural material continues, but no orders are accepted for delivery this year. The mills are sold up to July 1 on rails, about 1,400,000 tons having been contracted for, and with fully 100,000 tons that will go over from this year, more than one-half of the estimated production for 1903 is under contract. The Standard Steel Car Company, whose new works at Butler have recently been put in operation, has orders booked for nearly 10,000 cars. Orders were placed this week for 1,500 cars, 1,000 for the Erie Railroad and 500 for the Reading. The Pressed Steel Car Company has orders that will keep all of its plants busy until July 1.

Pig Iron.—Some heavy sales of bessemer pig iron are reported for delivery next year at firmer prices than have ruled. One purchase was at $22, Valley, and others at $21 and $21.50. Small lots for delivery this year have been sold on a basis of $23 and $24, Valley furnaces. Foundry iron is quiet. No. 2 is quoted at $23 and $24 Pittsburg for quick shipment and $21.50@$22 for next year. Gray forge is quoted at $21@$21.50 Pittsburg for any delivery.

Steel.—There is but little change in the steel market. Bessemer billets are about $5 a ton below the recent high point, being quoted at $30 at mill or $31 delivered at Pittsburg. Sheet bars are nominally at $32. The steel bar mills are busy on old contracts and are not taking on much new business. The price remains at 1.60c. Plates for prompt shipment command 1.85@2c.

Sheets—But few of the independent mills are able to meet the reduced price established by the American Sheet Steel Company. Black sheets are quoted at 2.75c. for No. 28 gauge and galvanized at 75 and 10 per cent off.

Ferro-Manganese.—Domestic 80 per cent is still out of the market. The foreign product is selling at $51 @$51.50.

New York. Oct. 17.

Pig Iron.—The current market is relying almost wholly on imports of foreign pig. Buying is not heavy. We quote for 1903 delivery, Northern irons at tidewater: No. 1X foundry, $23@$25.50; No. 2X, $22 @$23; No. 2 plain, $21@$22. For Southern iron on dock, New York, No. 1 foundry, $23@$23.50; No. 2. $22@$22.50; No. 3, $21.25@$22. Foreign pig is quoted at $21@$25.

Steel Rails.—Some large inquiries have been reported recently. Standard sections are still quoted at $28, f. o. b. mills for 1903 delivery; light rails, $30@$35, according to weight. Relaying rails are $28@$30 for heavy sections and $33@$35 for light sections.

Structural Material.—Deliveries are prompter. We quote for large lots at tidewater: Beams, angles, channels and tees, 2@2.20c. For small lots and prompt delivery good premiums are paid.

Bar Iron and Steel.—The market shows no change. We quote for large lots on dock: Refined bars, 2@2.05c.; common, 1.90@1.95c.; soft steel bars, 2@2.10c.

Plates.—Demand continues active. Deliveries can be made by some Eastern mills in from 4 to 5 weeks of receipt of order We quote for tidewater delivery in car-loads: Tank, ¼-in. and heavier, 2.05@2.20c.; flange, 2.15@2.25c.; marine, 2.25@2.50c.; universal, 2@2.20c.

Cartagena, Spain. Sept. 27.

(Special Report of Barrington & Holt.)

Shipments since our last report have been 1 cargo, 2,150 tons, manganiferous ore to Maryport, and 1 cargo, 3,100 tons, to Sydney, Cape Breton. This makes a total of 244,630 tons to date. Homeward freights continue high, due to the low outward rates of freight, and it seems to have become a common thing to send steamers out in ballast to load iron ore. South Spanish iron ore has found a new market in Sydney, Cape Breton, it being the first time a cargo of Cartagena iron ore has been shipped in that direction. As this can only be a trial cargo, it is difficult to say whether the new market will become one of importance. Here it is looked upon as an extraordinary event.

Quotations, which show an average rise of 3d., are per ton, f. o. b. shipping port: Ordinary, 50 per cent iron ore, 6s. 9d.@7s.; special low phosphorus ore, 50 per cent iron, 7s. 3d.@7s. 9d.; special ore, 50 per cent iron, 3 per cent manganese, 6 per cent silicon, 8s. 9d.; specular ore, 58 per cent iron, 9s. 3d.; magnetic ore, 60 per cent iron, 5 per cent silicon, 11s. 9d. for lumps and 9s. 9d. for smalls. For manganiferous ores quotations are: No. 1, 20 per cent iron and 20 per cent manganese, 14s. 6d.; No. 1B, 25 iron and 17 manganese, 11s. 6d.; No. 2, 30 iron and 15 manganese, 10s. 6d.; No. 3, 35 iron and 12 manganese, 9s. 9d. All

grades of manganiferous ores are rated at 11 per cent silicon and under 0.03 per cent phosphorus.

Iron Pyrites.—Pyrites, 40 per cent iron and 43 per cent sulphur, are quoted at 11s. 3d. per ton, f. o. b. shipping port. Exports have been 300 tons to Barletta.

CHEMICALS AND MINERALS.

(See also wholesale prices on page 538.)

New York, Oct. 17.

Shipping facilities are anything but good, and with the expected early resumption of coal mining the freight situation will likely be worse. Consequently chemical manufacturers, in compliance with the wishes of their customers, are hurrying deliveries to the utmost. Consumers, on the other hand, are accumulating stocks, fearing much trouble in transportation later on.

New orders are plentiful, and many large consumers are taking quick advantage of the low prices quoted by sellers. In some quarters there is a tendency to advance prices, but such action can only affect the hand-to-mouth buyer, as the best customers are already under contract.

The raw material market shows firmness, superinduced by the combinations curtailing the output so as to keep as nearly as possible within the limits of the demand.

Heavy Chemicals.—Deliveries are irregular, owing to a limited car supply. Further business has been done for next year's delivery, but the number of new contracts is becoming smaller. Bleaching powder continues the feature, selling forward at $1.15@$1.25 per 100 lbs., according to make and seller. Efforts are being made to induce buying into 1904 at these quotations, but consumers are chary, thinking prices will go lower. The situation looks serious for the manufacturers of old process bleach as the electrolytic works are rapidly increasing their production and are in a position to undersell competitors. Chlorate of potash is selling over next year at $7@$7.25 per 100 lbs., which shows a falling off from last year's quotations. Notwithtanding this reduction, importers who pay a duty of 2½c. per lb., are increasing shipments to this country.

We quote domestic chemicals, per 100 lbs., f. o. b. works, as follows: High test alkali, in bags, 82½@87½c., for prompt shipment, and 77½@85c. for forward; caustic soda, high-test, $1.90@$1.95 for early delivery, and $1.80@$1.87½ for futures; bicarb. soda, ordinary, $1, and extra, $3; sal soda, 60@65c.; chlorate of potash crystals, $7.50@$7.75 for immediate shipment, and $7@$7.25 for contracts. For foreign goods, we quote per 100 lbs. in New York: Alkali, high-test, 90@92½c.; caustic soda, high-test, $2.25; sal soda, 67½c.; bicarb. soda, $1.50@$1.60; chlorate of potash, $7.50@$7.75 for prompt, and $7.00@$7.25 for forward; bleaching powder, prompt, prime brands, Liverpool, $1.75; Continental, $1.55@$1.65.

Acids.—Were it not for the rumor that German and British makers of oxalic acid were to become friends again, the market would be featureless. Apparently the competition since the disruption of the last combination has been too much for both parties. In fact, it is known that both sides took long time orders at very low prices, just to keep their plants working. Aids to the revival of the combination were the failure of a prominent German manufacturing concern, and the destruction by fire of another large works. That a new agreement will soon be made by the various makers is reflected in a rising market here. Unfortunately large consumers have delayed renewing contracts for next year, expecting lower prices. Now they will have to pay any advance agreed upon by the manufacturers, as there is not enough oxalic acid in sellers' hands here to guarantee long-time delivery.

Quotations per 100 lbs. are as below, unless otherwise specified, for large lots in carboys or bulk (in tank cars) delivered in New York and vicinity:

Blue vitriol	$4.60@$5.00	Oxalic com'l	$6.25@6.87½
Muriatic, 18 deg.	1.50	Sulphuric, 50 deg., bulk, ton	13.50@15.50
Muriatic, 20 deg.	1.62½	Sulphuric, 60 deg.	1.05
Muriatic, 22 deg.	1.75	Sulphuric, 60 deg., bulk	18.00@20.00
Nitric, 36 deg.	4.00	Sulphuric, 66 deg., bulk	1.20 21.00@23.00
Nitric, 38 deg.	4.25		
Nitric, 40 deg.	4.50		
Nitric, 42 deg.	4.87½		

Brimstone.—The firmer ocean freight rates from Sicily have strengthened brimstone prices. Spot best unmixed seconds are quoted at $23.25@$23.75, and shipments $23@$23.25. Best thirds are worth about $1.75 per ton less than seconds.

Concerning the Sicilian market, Messrs. Emil Fog & Sons write us under date of September 30 as follows: Throughout September the market showed great firmness and increased activity. Those who had sold short, seeing the hopelessness of a decline, decided not to wait any longer, but to cover their requirements, and thus a considerable amount of business was done. The Anglo-Sicilian Company sold several large lots at full prices, without any reduction, even slightly raising prices, and encouraged by their success are now trying to go up further on their quotations. However, it is not likely that this course will have the desired effect. Most of the short sales seem now to be covered; the daily arrivals of brimstone from the interior are increasing and, in consequence, also dissidents' lots; on the other hand, we fail to notice any increase in consumption worth mentioning, nor is there any decrease visible in production. Moreover, money is becoming dear, and great capital is required to keep large stocks. We quote per ton: Best unmixed seconds, 82s. 9d.; best thirds, 76s. 6d.; refined block sulphur, 8s. 3d.; refined roll sulphur, in 3 cwt. casks, 98s.; sublimed flowers, pure, in bags, 102s.; sublimed flowers, current, in bags, 93s. 9d.

Freights are firm in consequence of the scarcity of steamers, owing to the low coal freights from England to the Mediterranean. For ballast lots to New York, 8s. has been paid, and 9s. for full cargoes to Portland. We quote: Philadelphia and Baltimore, 9s. 6d.; Boston, 9s.; Baltic ports, 15s.

Pyrites.—Domestic production promises to grow with the development of the extensive deposits in North Georgia, owned by the Chestatee Pyrites Company, which is headed by experienced mining men. Some high-grade iron pyrites has already been discovered, and considerable work done to open up the deposit. In the older fields, especially in Virginia, mining is active. Imports have also increased, and the consensus of opinion is that consumption will be very large this year. Prices are firmly held, and new contracts are usually based on present year's quotations, with perhaps a small reduction to large buyers.

Quotations are f. o. b. Mineral City, Va.: Lump ore, $5 per ton, and fines 10c. per unit; Charlemont, Mass., lump, $5, and fines, $4.75. Spanish pyrites, 13@13½c. per unit, New York and other Atlantic ports. Spanish pyrites contain 46 to 51 per cent of sulphur; American, from 42 to 44 per cent.

Sulphate of Ammonia.—Conditions favor easier prices. Spot gas liquor is selling around $2.97½ per 100 lbs. and shipments at $2.95.

Nitrate of Soda.—The market continues firm, owing to a smaller production and improved European buying. Spot is quoted at $1.90 per 100 lbs., and the same is offered on shipments to March next, while April-May brings $1.87½, and June-December, $1.85.

Concerning the nitrate of soda market in Chile, Messrs. Jackson Brothers, of Valparaiso, write under date of September 5, as follows: The principal feature of the fortnight was the brisk demand for 96 per cent, that sprang up especially for delivery in the present year; for 96 per cent, 1 per cent, up to 6s. 6d. per qtl. has been paid, and for 96 per cent, 1¼ per cent, prices of 6s. 6d.@6s. 7d. have been obtained; sales in the refined quality for January-March deliveries have been effected at 6s. 3½d.@6s. 4d., and for April at 6s. 2d., all alongside. For 95 per cent there has been little if any interest, but owing to the scarcity of prompt nitrate prices have been maintained and a few lots have changed hands at 6s. 4d.@6s. 5d., September delivery; 6s. 4½d. October; 6s. 4d., November, alongside terms. Exports for the first 8 months of this year have been 17,480,000 qtls., against 16,430,000 qtls. during the corresponding period last year. We quote 95 per cent, 6s. 4½d., September; 6s. 4d., October; 6s. 3½d., November; 6s. 3d., December, and 96 per cent, 6s. 7½d., September-December, all ordinary terms sellers. The price of 6s. 4½d., with an all-around freight of 17s. 6d., stands in 7s. 11¾d. per cwt., net cost and freight without purchasing commission. Reported sales for the fortnight ending September 5 were: 722,000 qtls., and resales, 176,000 qtls.

Phosphates.—There is a tendency to make European charters on private terms, which would indicate that exporters are not desirous that others should calculate the basis on which next year's contracts are being booked. Judging from foreign advices miners have accepted rather low terms on forward business, and now when their books are pretty full with orders they have advanced prices fractionally. A rise of ¼d. per unit on high-grade rock for export means 39c. more per ton, and this some large consumers refuse to pay.

Inquiries for about 15,000 tons American superphosphates for La Rochelle, France, are in the market. The American consul asks that exporters quote price f. o. b. Tampa, Fla., and c. i. f. La Rochelle, delivered on cars alongside. Recently 3,000 tons were sold. There is no import duty to be paid on superphosphates.

The shipments of Florida high-grade rock from Savannah in September amounted to 34,440 tons, being the largest in any month for three years past. Of this quantity Germany received 24,921 tons, Holland 2,677 tons, Belgium 3,268 tons, Austria 2,624 tons, and England, 950 tons.

Shipments from Fernandina in September were 19,340 tons, making a total for the 9 months of 149,165 tons, as against 157,859 tons last year; showing a decrease of 8,694 tons.

Phosphates.	Per ton F. o. b.	United Kingdom or European Ports. Unit.	Long ton.
*Fla. hard rock (78@80%)	$6.50@$7.00	6s.@6½d.	$10.07@10.27
*Fla. land peb. (68@73%)	3.00@ 3.25	4s.@5d.	6.65@ 7.00
†Tenn., (78@82%) export	3.25@ 3.50	5½@6d.	8.58@ 9.36
†Tenn., 78% domestic	3.00	...	.....
†Tenn., 75% domestic	2.75@ 3.00	.....	.....
†Tenn., 73@74% domestic	2.30@ 2.40	.....	.....
†Tenn., 70@72% domestic	2.10@ 2.25	.....	.....
‡So. Car. land rock	...@ 3.25	4½@5d.	5.67@ 6.30
‡So. Car. river rock	2.75@ 3.00	.....	.....
Algerian (63@68%)	.....	5½@6¼d.	7.15@ 8.13
Algerian (58@63%)	.....	5@5¾d.	6.00@ 6.90
Algerian (53@58%)	.....	4¾@5d.	5.32@ 5.58

*Fernandina, Brunswick or Savannah.
†Mt. Pleasant. ‡On vessels, Ashley River.

Liverpool. Oct. 8.

(*Special Report of Joseph P. Brunner & Co.*)

There is nothing new to report in the position of heavy chemicals, the business passing being only of a moderate character.

Exports of bleaching powder and sodas for the month of September, as per Board of Trade returns, just issued, are as follows: Bleaching powder, to United States, 44,198 cwts.; other countries, 21,993 cwts.; total, 66,191 cwts. Soda ash, 102,187 cwts.; caustic soda, 106,565; bicarbonate soda, 27,104; soda crystals, 16,822; sodium sulphate, 106,790; other sorts, 29,123; total, 388,591 cwts. As compared with the corresponding month last year, shipments of bleaching powder show a marked falling off. The total shipments of soda compounds are heavier, owing principally to the large exports of salt cake, while soda ash and soda crystals both show a falling off as compared with September, 1901. Soda ash is held for the usual varying prices as to destination. Nearest spot range for tierces may be called about as follows: Leblanc ash, 48 per cent, £5 15s.@£6; 58 per cent, £6 2s. 6d.@£6 7s. 6d per ton, net cash; ammonia ash, 48 per cent, £4 5s.@£4 10s; 58 per cent, £4 10s.@£4 15s. per ton, net cash; bags, 5s. per ton under price for tierces. Soda crystals are in moderate request at generally £3 7s. 6d. per ton, less 5 per cent for barrels, or 7s. less for bags, with special terms for certain export quarters. Caustic soda is quiet but firmly held for either prompt or forward delivery as follows: 60 per cent, £8 15s.; 70 per cent, £9 15s.; 74 per cent, £10 5s.; 76 per cent, £10 10s. per ton, net cash; special quotations for certain export markets. Bleaching powder is in retail demand on spot and quotations are nominal at about £6 10s.@£6 12s. 6d. per ton, net cash, for hardwood, with special quotations for Continental and other export markets. Over 1903 there is little fresh business reported, most consumers having already placed their contracts. Chlorate of potash is slow at nominally 2⅞d.@3d. per lb., net cash. Bicarb. soda is selling to a fair extent at £6 15s. per ton, less 2½ per cent for the finest quality in 1 cwt. kegs, with usual allowances for larger packages; also special quotations for a few favored markets. Sulphate of ammonia is still tending downwards and £12 2s. 6d. is about nominal spot quotations for good gray 24@25 per cent in double bags, f. o. b. here. Nitrate of soda is moving off to a limited extent on spot at £8 15s.@£9 per ton, less 2½ per cent for double bags, f. o. b. here, as to quality.

METAL MARKET.

New York, Oct. 16.

GOLD AND SILVER.

Gold and Silver Exports and Imports.

At all United States Ports in September and Year.

Metal	September. 1901.	September. 1902.	Year. 1901.	Year. 1902.
Gold:				
Exports	$161,382	$514,591	$32,680,569	$30,980,791
Imports	11,905,431	3,012,385	35,470,042	22,937,727
Excess.	I. $11,742,089	E. $2,497,884	E. $2,719,473	E. $8,043,064
Silver:				
Exports	4,834,683	4,635,803	41,487,929	35,580,539
Imports	2,195,227	2,397,640	22,491,144	18,702,077
Excess.	E. $2,639,456	E. $2,238,163	E. $18,996,785	E. $16,878,46

These figures include the exports and imports at all United States ports, and are furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York.

For the week ending October 16 and for years from January 1, 1902, 1901 and 1900:

Period.	Gold. Exports	Gold. Imports.	Silver. Exports.	Silver. Imports.	Total Excess Exports or Imports.
Week	.....	$1,182,305	15	$8,371	I. $53[illegible],639
1902	24,592,118	3,124,851	20,384,404	934,199	E. 40,773,472
1901	25,208,123	3,067,355	24,553,810	2,426,777	E. 44,363,327
1900	36,472,929	1,873,714	33,852,197	3,865,862	E. 61,586,644

Financial Notes of the Week.

The serious check to business caused by the coal situation seems in a fair way to be removed by a settlement of the strike. Some hesitation still continues, however, and until matters are definitely arranged, it will not wholly disappear. Money for speculative purposes continues scarce and the stock exchanges are unsettled. It seems not improbable that a period of settlement and adjustment after over-speculation is coming which may last for some time.

Exports of merchandise from the United States in September showed a large increase, chiefly due to the heavy shipments of grain and cotton. The total value was $115,521,984, showing an increase of $20,579,674 over August, and an increase of $9,532,058 over September, 1901. For the nine months ending September 30 the statement of the Bureau of Statistics of the Treasury Department is as follows:

	1901.	1902.
Exports	$1,046,319,267	$937,451,084
Imports	646,477,569	702,233,004
Excess exports	$399,841,698	$235,218,080
Excess of exports, gold	.....	8,043,064
Excess of exports, silver	.....	16,878,462
Total apparent balance	.....	$260,139,606

The gold and silver movement in detail will be found in the usual place in another column.

The statement of the New York banks, including the 59 banks represented in the Clearing House, for the week ending October 11 gives the following totals, comparison being made with the corresponding weeks of 1901 and 1900:

	1900.	1901.	1902.
Loans and discounts	$807,855,000	$870,900,700	$874,647,900
Deposits	861,588,700	942,688,900	872,340,600
Circulation	30,283,600	30,983,800	36,072,500
Specie	160,259,200	182,501,900	152,338,200
Legal tenders	59,601,900	70,653,500	67,274,300
Total reserve	$219,861,100	$253,155,400	$219,612,500
Legal requirements	215,397,175	235,672,225	218,085,150
Balance, surplus	$4,463,925	$17,483,175	$1,527,350

Changes for the week this year were increases of $2,344,200 in loans and discounts, $164,600 in deposits, $411,600 in circulation, and $1,068,300 in specie; decreases of $1,319,000 in legal tenders, and $291,850 in surplus reserve.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars and comparison made with the holdings at the corresponding date last year:

	1901. Gold.	1901. Silver.	1902. Gold.	1902. Silver.
N. Y. Ass'd	$182,501,900	.....	$152,338,200	.....
England	186,866,525	.....	173,590,985	.....
France	471,521,315	$221,199,770	511,661,435	$221,490,535
Germany	154,920,000	60,250,000	156,380,000	57,835,000
Spain	70,025,000	85,680,000	74,415,000	97,070,000
Neth'l'ds	28,775,500	28,246,500	23,450,500	32,388,500
Belgium	15,806,665	7,903,335	16,196,665	8,098,335
Italy	79,500,000	9,819,000	80,400,000	10,264,000
Russia	336,775,000	30,425,000	361,945,000	35,570,000

The returns of the Associated Banks of New York are of date October 11 and the others October 9, as reported by the *Commercial and Financial Chronicle* cable. The New York banks do not report silver separately, but specie carried is chiefly gold. The Bank of England reports gold only.

Silver closes rather weak, and slightly lower prices are not improbable. The demand at present is not keen enough to support a rising market.

The United States Assay Office in New York reports receipts of 115,000 oz. silver for the week.

Indian exchange continues fairly strong, and the Council bills offered in London were taken at an average of 15.97d. per rupee. Buying of silver in London for Indian account continues very moderate.

Shipments of gold from Australia for the eight months to the end of August are reported as follows:

	1901.	1902.	Changes.
Melbourne	£2,858,282	£2,557,261	D. £301,021
Sydney	2,168,806	1,031,070	D. 1,137,736
Western Australia	3,012,781	3,652,891	I 640,110
Total	£8,039,869	£7,241,222	D. £798,647

Included in the shipments this year were £1,476,863 to India, £182,613 to China, £2,600,000 to South Africa and £100,000 to San Francisco. The balance went to Great Britain.

Prices of Foreign Coins.

	Bid.	Asked
Mexican dollars	$0.40	$0.42
Peruvian soles and Chilean pesos	.38¾	.42
Victoria sovereigns	4.85	4.88
Twenty francs	3.85	3.88
Twenty marks	4.74	4.80
Spanish 25 pesetas	4.78	4.82

OTHER METALS.

Daily Prices of Metals in New York.

October.	Sterling Exchange	Silver—N. Y. Cts.	Silver—London Pence.	Copper—Lake Cts. per lb.	Copper—Electrolytic per lb.	Copper—London £ per ton.	Tin, cts. per lb.	Lead cts. per lb.	Spelter—N.Y. cts. per lb.	Spelter—St. L cts. per lb.
10	4.85⅝	50⅛	23⅝	11⅛ @11¾	11¼ @11⅜	51 11/16	25¼	4.05 @4.10	5.40	5.20
11	4.85⅝	50⅛	23⅝	11⅛ @11¾	11¼ @11⅜	....	25¼	4.05 @4.10	5.40	5.20
13	4.85¼	50⅜	23 7/16	11⅜	11¼ @11⅜	51⅝	25⅜	4.05 @4.10	5.40	5.20
14	4.85⅛	50⅛	23⅜	11⅝	11⅜	52⅛	25⅜	4.05 @4.10	5.40	5.20
15	4.85⅛	50⅛	23⅜	11⅝	11⅜	52	25¼	4.05 @4.10	5.40	5.20
16	4.85¼	50¼	23⅜	11⅝ @11¾	11⅜ @11⅜	52⅝	25¼	4.05 @4.10	5.40	5.20

London quotations are per long ton, (2,240 lbs.) standard copper, which is now the equivalent of the former g. m. b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c lower than these figures.

Copper was again rather dull until toward the end of the week, when the better feeling prevalent in business circles, owing to the approaching settlement of the coal strike, caused consumers and dealers to operate with more confidence.

Europe also sent some fair sized orders at full prices. Values have consequently stiffened, and we quote at the close Lake 11⅝@11¾c.; electrolytic in cakes, wirebars or ingots, 11⅜@11½c.; cathodes, 11⅛@11¼c., and casting copper, 11⅜@11½c.

The market for standard copper, which closed last week at £51 13s. 9d., opened on Monday at £51 12s. 6d., and the closing quotations are cabled as £52 7s. 6d.@£52 10s. for spot and £52 12s. 6d.@£52 15s. for three months prompt.

Refined and manufactured sorts we quote: English tough, £55 10s.@£56; best selected, £56@£56 10s.; strong sheets, £68 10s.; India sheets, £67; yellow metal, 6⅜@6½d.

Exports of copper from Atlantic ports in the week ending October 15 are reported by our special correspondents as follows: Great Britain, 290 tons; Germany, 790; Holland, 370; France, 813; Panama, 14; total, 2,277 tons. Imports were 882 tons copper from Mexico, 45 tons copper from Japan, 2,991 tons ore from Tilt Cove, and 275 tons ore from England.

Copper production, as reported by Mr. John Stanton, who acts as statistician for the companies, was as follows for September and the nine months ending September 30, in long tons (2,240 lbs.) of fine copper.

	September. 1901.	September. 1902.	Nine months. 1901.	Nine months. 1902.
U. S., reporting mines	18,080	23,688	168,726	187,381
U. S., outside sources	3,500	2,100	30,900	30,900
Total U. S.	21,580	25,788	199,626	218,281
Foreign reporting mines	9,477	9,155	73,758	80,415
Totals	31,057	34,943	273,484	298,696
Exports from U. S.	6,419	13,183	68,110	135,311

The September production was 492 tons more than that reported for August, and 4,208 tons more than in September, 1901. Foreign reporting mines showed a decrease of 322 tons for the month. The United States exports showed the large increases of 6,764 tons for September, and 67,311 tons for the nine months.

Chilean Copper Market.—Messrs. Jackson Brothers write from Valparaiso, Chile, under date of September 6, that charters for copper from Chile up to August 31 show a decrease of 1,070 tons as compared with the corresponding date last year. Sales of bar copper for the 20 days ending August 26 amounted to 15,867 quintals, at an average price of $32.15 currency or $28.83 gold per Spanish quintal. Sales of regulus were 250 tons, 50 per cent copper, at an average of $13.93 currency ($12.50 gold) per quintal. No copper ores have been offered for sale.

Tin displayed considerable strength and prices advanced steadily throughout the week. There has been a very good consumptive inquiry for spot as well as future delivery. At the close we quote spot 25¾@26c.; October, 25¾c.; November, 25½c.; December, 25⅜c.

The foreign market, which closed last week at £114, opened on Monday at £114 5s., and the closing quotations are cabled as £117@£117 2s. 6d for spot and £116@£116 2s. 6d. for three months prompt.

Lead is dull without any change. The ruling quotations are 4@4.05c., St. Louis, and 4.05@4.10c., New York.

The foreign market is easy, Spanish lead being quoted £10 12s. 6d.@£10 15s., with English lead 2s. 6d higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is firm but quiet. Missouri brands are selling at 4c.; desilverized lead at 4.05c.

Spanish Lead Market.—Messrs. Barrington & Holt report from Cartagena, Spain, under date of September 20, as follows: The price of silver during the week has been 12.75 reales per ounce. Exchange has gone up by 9 centimos making it 33.90 pesetas to £1. The local quotation for pig lead on wharf has been 59.25 reales per quintal, which on above exchange is equal to £9 15s. 9d. per ton of 2,240 lbs., f. o. b. Cartagena. Exports of pig lead have been: 505,000 kgs. to London; 384,621 kgs. to Marseilles; 101,000 kegs to Liverpool; a total of 987,621 kgs. for the week.

Spelter is somewhat easier in tone, but there has been a very good consumptive inquiry. The ruling quotations are about 5.20c., St. Louis, and 5.40c., New York.

The foreign market is also somewhat easier, good ordinaries being quoted £19 2s. 6d., and specials 5s. higher.

St. Louis Spelter Market.—The John Wahl Commission Company telegraphs us as follows: Spelter is steady at about 5.20c. The demand is slacking up a bit and buyers, fearing a decline, are only buying from hand to mouth.

Silesian Spelter Market.—Herr Paul Speier writes from Breslau, under date of September 30, that there has been a halt in the firmer tendency of prices. Consumers have held back, and trade has been less active, with a consequent shading of quotations, which may be given at 18.85@19.25 marks per 50 kgs., f. o. b. cars at Breslau. This is equivalent to an average of 4.11c. per lb. The imports and exports in Germany for the eight months ending August 31 are reported as below, in metric tons:

	Imports. 1901.	Imports. 1902.	Exports. 1901.	Exports. 1902.
Spelter	26,508	33,091	62,824	99,520
Zinc sheets	354	143	19,414	23,145
Scrap zinc	1,410	1,226	1,539	2,801
Zinc white	5,771	4,691	20,763	27,867
Lithopone	35	32	8,829	10,940
Zinc ore	108,280	91,145	50,975	64,039

The heavier exports of spelter were to Great Britain, Austria and Russia. Imports of ores were from Austria-Hungary, Sweden, Algeria, the United States, and Australia. Exports of ore were chiefly to Belgium.

Antimony is dull. Cookson's is 9@9½c.; Hallett's, 7½@7¾c.; Hungarian, Japanese and U. S. Star, 7¼@7½c.

Nickel.—The price is now quoted by leading producers at 40@47c. per lb., for large quantities down to ton lots, according to size and terms of order. The price for smaller lots, according to quality, runs as high as 60c. per lb.

Platinum.—Consumption continues good, and prices are firm. Ingot platinum in large lots brings $19 per oz. in New York.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 73½c. per gram.

Quicksilver.—The New York price continues $48 per flask for large orders, with a slightly higher figure for small lots. In San Francisco prices are steady, and the quotations are $45.50@$46.50 per flask for domestic orders. For export orders $44 per flask is quoted. The London price remains £8 15s. per flask, with the same figure quoted from second hands.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

Aluminum.	Per lb.
No. 1, 99% ingots	33@37c.
No. 2, 90% ingots	31@34c.
Rolled Sheets	4c. up
Alum-bronze	20@23c.
Nickel-alum	33@39c.
Bismuth	$1.50
Chromium, pure (N.Y.)	80c.
Copper, red oxide	50c.
Ferro-Molyb'um (50%)	$1.25
Ferro-Titanium (10%)	90c.
Ferro-Titanum (20@25%, N. Y.)	55c.

	Per lb.
Ferro-Tungsten (37%)	28c.
Magnesium	$2.75
Manganese, pure (N.Y.)	60c.
Mangan'e Cop. (20% Mn)	32c.
Mangan'e Cop. (30% Mn)	38c.
Molybdenum (Best)	$1.82
Phosphorus	45c.
American	70c.
Sodium metal	50c.
Tungsten (Best)	62c.

Variations in price depend chiefly on the size of the order.

Average Prices of Metals per lb., New York.

Month.	Tin. 1902.	Tin. 1901.	Lead. 1902.	Lead. 1901.	Spelter. 1902.	Spelter. 1901.
January	28.54	26.51	4.000	4.350	4.27	4.18
February	24.07	26.69	4.075	4.350	4.15	4.01
March	26.32	26.03	4.075	4.350	4.23	3.91
April	27.77	25.93	4.075	4.350	4.37	3.98
May	29.85	27.12	4.075	4.350	4.47	4.04
June	29.36	28.60	4.075	4.350	4.96	3.99
July	28.38	27.85	4.075	4.350	5.27	3.95
August	28.23	26.78	4.075	4.350	5.44	3.90
September	26.60	25.31	4.075	4.350	5.49	4.08
October	....	26.62	....	4.350	...	4.28
November	....	26.67	....	4.350	...	4.29
December	....	24.36	....	4.153	...	4.31
Year	....	26.54	....	4.334	...	4.06

Average Prices of Copper.

Month	New York Electrolytic. 1902.	1901.	Lake. 1902.	1901.	London Standard. 1902.	1901.
January	11.053	16.25	11.822	16.77	48.43	71.78
February	12,173	16.38	12,378	16.90	55.16	71.17
March	11.882	16.42	12.188	16.94	53.39	69.54
April	11.618	16.43	11.988	16.94	52.79	69.61
May	11.856	16.41	12.226	16.94	54.06	69.60
June	12.110	16.38	12.360	16.90	53.93	68.83
July	11.771	16.31	11.923	16.61	52.89	67.60
August	11.404	16.25	11.649	16.50	51.98	66.34
September	11.480	16.25	11.760	16.54	52.68	65.97
October	....	16.25	....	16.60	...	64.11
November	....	16.224	....	16.33	....	64.51
December	....	13.845	....	14.36	....	62.34
Year	...	16.117	....	16.58	....	66.79

New York prices are in cents, per pound; London prices in pounds sterling, per long ton of 2,240 lbs., standard copper. The prices for electrolytic copper are for cakes, ingots or wire bars; prices of cathodes are usually 0.25 cent lower.

Average Prices of Silver, per ounce Troy.

Month.	1902. London. Pence.	1902. N. Y. Cents.	1901. London. Pence.	1901. N. Y. Cents.	1900. London. Pence.	1900. N. Y. Cents.
January	25.62	55.56	28.97	62.82	27.80	59.30
February	25.41	55.09	28.13	61.06	27.40	59.76
March	25.00	54.23	27.04	60.63	27.59	59.81
April	24.34	52 72	27.30	59.29	27.41	59.59
May	23.71	51 31	27.43	59.64	27.56	59.90
June	24 17	52 36	27.42	59.57	27.81	60.42
July	24.38	52.88	26.96	58.46	28.23	61.25
August	24.23	52.52	26.94	58.37	28.13	61.14
September	23.88	51.52	26.95	58.26	28.85	62.63
October	....	....	26.62	57.59	29.58	63.83
November	..	....	26.12	56.64	29.68	64.04
December	..	....	25.46	55.10	29.68	64.14
Year	....	....	27.11	58.95	28.27	61.33

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

DIVIDENDS.

Name of Company.	Latest Dividend Date.	Per Share.	Total.	Total to Date.
†Alaska-Treadwell	Oct. 28	.37½	75,000	5,120,000
†Amalgamated	Nov. 24	.50	769,439	19,656,687
§Anaconda	Nov. 13	.50	600,000	22,050,000
*Bartolome de Medina, Mex.	Oct. 31	.60	1,200	61,083
*Cinco Senores, Mex	Oct. 31	4.00	8,000	641,105
De Lamar, Idaho	Oct. 31	.48	32,247	129,660
*Four Oil, Cal.	Oct. 18	.01	2,087	22,957
*Gold Coin, Colo.	Oct. 25	.01	10,000	1,200,000
*Helena, Ore.	Oct. 25	.01½	19,500	248,000
*Home Oil, Cal.	Oct. 18	.07½	7,500	435,000
*Homestake, S. D.	Oct. 25	.25	54,000	11,602,950
†Mary McKinney	Oct. 10	.03	30,000	480,000
*Natividad, Mex.	Oct. 22	.80	3,840	150,946
*N. Y. & Hond. Rosario.	Oct. 25	.10	15,000	1,820,000
*Peerless Oil, Cal.	Nov. 1	.08	7,360	39,560
§Penna. Steel	Nov. 1	3.50	577,500	1,427,500
†Phila. Nat. Gas, com.	Nov. 1	.75	231,407	2,491,207
†Portland, Colo.	Oct. 15	.03	90,000	4,297,080
Pride of the West, Ariz.	Oct. 15	.10	15,000	15,000
†Tenn. C. & I. R. R. pf.	Nov. 1	2.00	4,960	282,720
†Texas & Pacific Coal.	Oct. 25	1.50	30,000	2,040,000
†U. S. Steel, com.	Dec. 30	1.00	5,080,222	34,520,994
†U. S. Steel pf.	Nov. 15	1.75	9,130,497	53,745,626
West Shore Oil, Cal.	Oct. 3	.05	5,000	40,000

*Monthly. †Monthly. §Semi-annual.

ASSESSMENTS.

Name of Company.	Location.	No.	Delinq.	Sale.	Amt.
Alma	Cal.	..	Oct. 29	.....	.05
Alta	Nev.	71	Oct. 23	Nov. 13	.05
Andes	Nev.	57	Oct. 20	Nov. 10	.05
Belcher	Nev.	74	Oct. 7	Oct. 28	.10
Blue Eagle	Utah.	3	Sept. 27	Nov. 1	.05
Carmelita Oil.	Cal.	5	Oct. 13	Nov. 7	.01
Challar	Nev.	60	Nov. 5	Nov. 25	.05
Con. Imperial	Nev.	..	Nov. 6	Dec. 2	.01
Diamond Con.	Utah.	3	Oct. 16	Nov. 3	.02
Equality Oil.	Cal.	..	Oct. 10	Nov. 9	.01
Imperial	Cal.	..	Sept. 29	.....	.006
Jubilee	Cal.	..	Oct. 27	.....	.05
Julia Con.	Nev.	..	Oct. 17	Nov. 7	.03
Justice	Nev.	..	Oct. 8	Oct. 24	.05
Lady Washington	Nev.	..	Oct. 22	Nov. 12	.05
Larkin	Cal.	..	Nov. 1	.....	.02
Linda Vista	Cal.	..	Nov. 6	.....	.03
Marino Marsicano	Cal.	32	Nov. 1	.....	.02
Martha Washington	Utah.	11	Oct. 27	Nov. 17	.02
McKittrick	Cal.	..	Oct. 3	Oct. 28	.01
Mountain Lake	Utah.	..	Sept. 30	Oct. 20	.01
New Manzanita	Cal.	..	Nov. 5	.....	.02
Nyak Bay	Alaska.	..	Nov. 7	.....	.03
Olinda Oil.	Cal.	..	Nov. 3	.....	.01
Overman	Nev.	..	Nov. 10	Dec. 2	.10
Planet Con.	Cal.	..	Nov. 1	.....	.01
Potosi	Nev.	64	Nov. 10	Dec. 1	.05
San Pablo Oil.	Cal.	..	Oct. 25	.....	.05
Sierra Nevada	Nev.	..	Oct. 8	Oct. 27	.10
Silver Shield	Utah	2	Oct. 22	Nov. 13	.02
Sonora	Cal.	..	Oct. 19	.....	.02
Union Con.	Nev.	65	Nov. 12	Dec. 4	.10
Wedge Extension	Utah.	2	Oct. 20	Nov. 10	.00½
West Morning Glory	Utah.	13	Oct. 15	Nov. 1	.00¼
Yellow Jacket	Nev.	12	Oct. 21	Nov. 26	.10

STOCK QUOTATIONS.

NEW YORK.

Company and Location.	par val	Oct. 9. H.	Oct. 9. L.	Oct. 10. H.	Oct. 10. L.	Oct. 11. H.	Oct. 11. L.	Oct. 13. H	Oct. 13. L.	Oct. 14. H.	Oct. 14. L.	Oct. 15. H.	Oct. 15. L.	Sales
Acacia Colo.	$1	...	...	...	...	...	...	...	...	67⅛	...	...	...	1,000
Amalgamated c., Mont	100	63 75	62 00	63.50	62 50	63.00	62.25	63.50	62.13	66.60	63 25	66.50	65 00	69,970
*Anaconda c., Mont.	25	89	...	87⅞	...	96⅞	95	96	.....	96¾	95	101	99½	100 .97	4,900
Anaconda, g., Colo.	5	...	...	...	...	...	...	...	...	...	...	...	...	...
Argentum J., Colo.	2	...	...	...	...	...	...	...	...	...	...	...	...	...
Best & Belcher, Nev.	3	...	...	...	...	...	...	...	...	...	...	...	...	...
Brunswick, Cal.	1	.08	...	...	...	...	...	.08	...	07½	.07	...	...	3,000
Comstock T., s., Nev.	2	...	...	...	...	...	...	...	...	...	...	...	...	...
Comst T Bonds	100	...	...	...	...	...	...	95⅛	...	.95	...	.65	...	7,000
Con. Cal. & Va. g.s. Nev	2⅛	...	...	1.65	...	...	...	1.00	...	...	...	1.00	...	550
Crescent, Colo.	10	...	...	...	...	...	...	.68	...	...	...	...	...	200
Cripple Creek c., Colo.	1	...	...	...	...	...	...	.06⅜	...	...	...	.08	...	2,000
Elkton, g., Colo.	1	.32	...	...	...	...	...	.33	...	...	...	.33	.32	600
Golden Fleece, Colo.	1	.18	...	.17	...	...	...	...	...	.17	...	...	...	1,300
Greene Con., c., Mex.	10	26.00	25.50	25.75	25.00	25 00	24.75	25.50	24.00	25.00	24.25	24.75	23.75	6,250
Hale & Norcross, Nev	3	...	...	...	...	...	...	...	...	...	...	...	...	...
Isabella, g., Colo.	1	.30	...	...	...	...	...	.31	...	.31	...	.32	...	2,300
Jack Pot, Colo.	1	.15	...	...	...	...	...	...	...	...	...	...	...	300
Mexican, Nev.	3	...	...	...	...	...	...	...	...	...	...	...	...	...
MollieGibson, g.s. Colo	5	.08	...	...	...	...	...	...	...	.08	...	...	...	1,500
Moulton, Mont.	25	...	...	...	...	...	...	...	...	...	...	...	...	...
Ontario, s. l., Utah	100	...	...	...	...	...	...	...	...	9 00	8.50	...	...	800
Ophir, s., Nev	3	...	...	...	...	...	...	...	...	...	...	...	...	...
Pharmacist, Colo	1	...	...	.04½	...	...	...	.05	...	...	...	...	...	400
Phoenix, Ariz.	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Portland, g., Colo.	10	...	...	1.75	...	...	...	1.75	...	1 76	...	...	...	500
Quicksilver, Cal.	100	...	...	...	...	...	...	...	...	2.50	...	...	...	100
Quicksilver pf., Cal.	100	8.00	...	...	...	...	...	...	...	...	...	...	...	...
Sierra Nevada, Nev.	3	...	...	...	...	...	...	...	...	...	...	...	...	...
Small Hopes, Colo.	20	45	...	...	...	...	...	...	...	...	...	...	...	100
Standard Con	10	...	...	3 50	...	...	...	...	...	...	...	...	...	100
Syndicate, Cal.	1	...	...	04	...	...	...	...	...	...	...	...	...	2,000
Tenn. c., Tenn	2	17.00	16.25	16 75	16.50	17.00	16.25	16.38	...	16.88	16 50	16 88	16.50	2,950
Union. c., N. C	1	3.00	...	3.00	...	3.00	.....	3.00	2.75	2.88	.....	3.00	2.75	1,850
Virginia Con., Colo	-	...	...	...	...	...	...	...	...	...	...	...	...	...
White Knob, g. s., Ida	10	17.00	.....	17.00	16.75	17.50	15.00	17.50	15.00	17.50	15 50	16.50	15.00	160

†Ex-dividend.

Coal, Iron and Industrial Stocks.

Am. Agr. Chem., U.S.	100	23¾	...	25½	23¼	22⅛	.....	25½	24¼	22½	.....	.....	.....	100
Am. Agr. Chem. pf, U.S.	100	84¼	83¼	83½	.....	83¾	.....	84	83½	.....	.....	83½	.....	.....
Am. Sm. & Ref., U.S.	100	45⅝	45¼	45½	.....	44¼	44	44	43	45⅛	44⅜	46	45½	5,900
Am. Sm. & Ref. pf, U.S.	100	95	...	94⅜	.....	95	94¾	.....	.....	94	.....	95	94	1,320
Col. Fuel & I., Colo.	100	132	.....	85½	83¾	84½	83¾	83¾	81⅝	84⅜	83¼	85¼	84¼	74,700
Col. & H. C. & I., Colo.	100	...	.....	...	.....	22	21¾	21¼	21	22⅜	22	22	.....	1,900
Crucible Steel, U. S.	100	22¼	22	22⅜	21¾	.....	.....	21⅜	21¼	21¾	.....	.....	.....	1,250
Crucible Steel, pf, U.S.	100	85¾	...	85¾	85⅜	.....	.....	85¼	85	86	85½	86	.....	1,301
Int'l S. Pump, U.S.	100	50	48¼	50	49⅛	49½	49	49⅝	.....	.....	.....	51	49	100
Int'l S. Pump pf, U.S.	100	94	92	92	.....	95	92	91½	.....	92½	90	.....	.....	500
Mong. R. Coal, Pa.	100	11⅜	...	11¾	.....	.....	.....	11⅝	.....	.....	.....	11¾	.....	945
Mong. R. Coal pf, Pa.	100	40¼	39	40	.....	.....	.....	40¼	39½	40¼	.....	40	.....	523
National Lead, U.S.	100	28½	28	28⅝	27½	28	27¼	27¼	26½	28¼	27⅜	29	28	6,710
National Lead pf, U.S.	100	84¼	83¼	93	.....	.....	.....	92	.....	93	.....	93	.....	800
Phila Nat. Gas.	100	48⅜	47¾	.....	.....	47¾	47½	.....	.....	.....	.....	47½	47⅜	938
Phila Nat. Gas, pf.	100	48	...	49½	.....	49¾	49½	.....	.....	.....	.....	49¾	.....	484
Pittsburg Coal, Pa.	100	29¾	29½	29¾	.....	.....	.....	29⅜	29	29¾	29⅜	29⅝	29½	1,494
Pittsburg Coal pf, Pa.	100	92	91¾	91¾	91½	.....	.....	91¾	.....	91¾	89⅝	89⅝	.....	528
Republic I. & S., U.S.	100	21¾	21¼	21½	21	21	20½	20½	19⅜	21⅜	20⅜	21½	21	16,510
Republic I. & S., pf, U.S.	100	77⅜	77¼	78	.....	77¾	77¼	77	76⅝	77⅛	77	78	77¼	3,400
Sloss-Shef S. & I., Ala.	100	57	52	60¾	57	61	60	58¾	55	61	77	78	77½	3,400
Sloss-Shef S. & I. pf, Ala.	100	...	...	...	...	90	88¼	89	88	91	89	.....	.....	900
Standard Oil, U.S.	100	660	655	660	655	655	650	650	645	654	650	650	.....	254
Tenn. C. I. & R. R., Ala.	100	65¾	63¾	63⅛	53	63	62	61⅜	60½	63¾	62½	64⅞	63⅝	23,200
U. S. Cast I. Pipe, U.S.	100	16	15¾	16	15¾	16	15	15⅝	15¼	16	15⅞	16	15⅝	5,425
U.S.C. I. Pipe, pf, U.S.	100	55⅜	54⅜	55¼	55	54¾	53⅛	54	53	54⅞	54	54½	.....	3,600
U. S. Red. & Ref., Colo.	100	...	...	...	...	...	...	...	...	...	...	...	...	...
U.S. Red. & Ref. pf, Colo	100	...	...	...	...	...	...	...	...	...	...	...	...	...
U.S. Steel Corp., U.S.	100	40	39½	39⅝	39⅜	39¾	39	39⅛	38⅜	40	39½	40¼	39¾	75,363
U.S. Steel Corp. pf, U.S.	100	90¼	88¾	88⅞	88⅛	88¼	87¾	88¾	87½	89⅜	88¾	89¾	89	52,515
Va.-Car Chem., U.S.	100	67¾	66⅜	67¼	66¾	66	65	66	64½	66⅜	65½	66¾	66	6,420
Va.-Car Chem. pf, U.S.	100	...	...	...	...	...	...	...	...	...	...	130½	125	...
W'house Elect., Pa.	50	214	211½	211½	.....	.....	.....	.....	.....	.....	.....	220	210	500
W'house Elect., pf, Pa.	50	...	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Total sales, 346,205 shares.

BOSTON, MASS.*

Name of Company.	par val	Shares listed.	Oct. 9. H.	Oct. 9. L.	Oct. 10. H.	Oct. 10. L.	Oct. 11. H.	Oct. 11. L.	Oct. 13. H.	Oct. 13. L.	Oct. 14. H.	Oct. 14. L.	Oct. 15. H.	Oct. 15. L.	Sales
Adventure Con., c.	$25	100,000	18.25	18.00	18.25	.....	18 25	18 00	18 50	18.00	19 75	19.00	22.00	21.50	1,159
Aetna, Con.	5	100,000	.....	.....	.....	.....	.50	.....	.....	.....	.....	.....	.....	.....	.....
Allouez	25	80,000	.....	.....	2.50	.....	.....	.....	.....	2.13	2.50	.....	2.50	.....	570
Amalgamated, c.	100	1,538,879	63.50	62 00	63 00	62 63	63.00	63.00	62.13	63.00	65.88	63.50	66 50	65.25	11,449
Am. Z. L. & Sm.	25	60,000	.....	.....	.....	.....	.....	.....	.....	.....	11.25	.....	.....	.....	10
Anaconda, c.	25	1,200,000	.....	.....	25.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
Arcadian, c.	25	150,000	5.00	4.63	4 75	.....	.....	.....	4.75	4.50	4 50	.....	.....	.....	565
Atlantic, c.	25	40,000	25.00	.....	.....	.....	.....	.....	25.00	21.0	22 50	22 00	24.00	22 50	1,115
Bingham Con., g. s.	50	150,000	28 00	27.50	.....	.....	27.50	.....	27.00	28.75	28.00	27.00	28.50	28.00	1,215
Bonanza	10	300,000	.....	.....	.....	.....	.60	.....	.....	.....	.....	.....	.....	.....	15
Cal. & Hecla, c.	25	100,000	5.10	5.05	5.10	.....	5.10	.....	5 20	.....	510	.....	.....	.....	52
Centennial, c.	25	90,000	18.38	16 00	18.00	17.50	18.00	17 50	17.50	16 50	18 50	17.00	18.75	18.00	3,890
Cochiti	10	182,250	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. Mercur, g.	5	1,000,000	2.00	.....	2.00	.....	.....	.....	2 00	1 90	.....	.....	1 93	1.88	2,845
Copper Range Con.	100	285,000	58.50	57.00	58 25	57.50	58.00	57 50	58 00	57.50	59.00	57.75	59.50	58.50	7,597
Daly-West., g. s.	20	180,000	.....	.....	.....	.....	.....	.....	.....	48 50	.....	50 00	.....	.....	70
Dominion Coal	100	150,000	1 31	127½	128½	127	.....	.....	126⅝	1 26	127½	.....	1.28½	1 28	1,930
Dominion Coal, pf.	100	30,000	.....	.....	116¼	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
Dominion I & S.	100	100,000	57.00	52 00	55 25	52.50	53 50	52.00	53 50	50.75	56.00	53.50	56.25	55.00	21,713
Elm River	12	100,000	.....	.....	2 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Franklin, c.	25	100,000	10.00	9 75	.....	.....	.....	.....	9 50	.....	9 63	.....	.....	.....	185
Guanajuato Con.	5	385,000	3 00	2.75	3.00	.....	.....	.....	2 88	2.75	3.00	.....	3.25	3.00	2,435
Isle Royale Con., c.	25	150,000	14.50	13.00	13 25	.....	13 00	.....	13.25	.....	13 25	.....	13 50	.....	605
Mass Con., c.	25	100,000	15.00	14 00	14.50	13 88	14 25	.....	13 75	12.75	14.25	13 75	14.75	14 25	2,574
Mayflower, c.	25	100,000	1.50	.....	.....	.....	2.00	.....	1 50	.....	.....	.....	1.50	.....	171
Michigan, c.	25	100,000	.....	.....	10.00	.....	.....	.....	10.13	9.50	.....	.....	10 00	.....	270
Mohawk, c.	25	100,000	47.00	46.00	46 00	45 50	.....	.....	.....	.....	47.00	45.00	47.38	46 75	1,682
Mont. Coal & Coke.	25	200,000	6.00	.....	.....	.....	.....	.....	6.00	.....	.....	.....	.....	.....	60
Mont'l & Boston, c.	5	570,000	.....	.....	3.00	.....	.....	2.38	.....	2.63	2.63	2.50	.....	.....	1,125
National Lead	100	149,054	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. E. Gas & Coke.	100	.....	5 00	4.75	5 00	4.88	4 88	.....	.....	.....	.....	.....	.....	.....	.....
New Idria	5	100,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Star	10	250,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Old Colony, c.	25	100,000	2 00	.....	.....	.....	.....	.....	.....	.....	2.00	.....	.....	.....	535
Old Dominion, c.	25	150,000	18 50	16.00	16.00	.....	.....	.....	16.25	16.00	17.25	16.50	17 75	17.00	2,410
Osceola, c.	25	96,150	57.00	.....	57.00	.....	.....	.....	57 00	56.00	56.00	.....	57.00	.....	147
Parrot, s. c.	10	229,850	25 00	.....	.....	.....	.....	.....	25.00	.....	26 00	25. 0	26.25	26.00	527
Phoenix Con., c.	25	100,000	4 25	.....	.....	.....	.....	4.25	4 00	.....	4 00	.....	4.50	4.00	565
Quincy, c.	25	100,000	1.25	.....	1.25	.....	1.25	.....	.....	.....	.....	.....	.....	.....	45
Rhode Island, c.	25	100,000	.....	.....	.....	.....	.....	.....	2.00	1.75	2.00	1.88	2.00	.....	1,210
Santa Fe, g. c.	10	250,000	1.63	.....	.....	.....	.....	.....	1.50	.....	.....	.....	1.75	1.50	330
Shannon, c.	10	180,295	9 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 00	9.50	240
Tamarack, c.	25	60,000	.....	.....	.....	.....	1.65	.....	1 60	.....	165	160	162	.....	153
Tecumseh.	25	40,000	1.50	.....	.....	.....	.....	.....	1.50	.....	1.88	1.38	.....	.....	445
Trimountain.	25	100,000	93 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
Trinity, c.	25	100,000	10 50	10.00	10.38	10.00	10 25	.....	10.25	10.00	11.75	10.50	11 75	11.00	3,320
United States, g.	25	250,000	21.00	20 50	20.75	.....	20 75	.....	21.50	20.25	21.50	21.00	21.25	21.00	2,825
U. S. Coal & Oil.	25	240,000	15.00	14 50	14.50	14.38	14 75	14.25	14 75	14.25	14 88	14.2.	15 00	14 50	7,527
Utah Con., g.	5	300,000	22 00	21 00	21.00	.....	21 25	.....	21 13	21.00	21.13	.....	21.88	4.75	440
Victoria, c.	25	100,000	5.00	4.50	.....	.....	5.00	4 63	4.50	.....	.....	.....	.....	.....	.....
Washington, c.	25	60,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Winona. c	25	100,000	4.00	.....	.....	.....	.....	.....	3.75	.....	.....	.....	.....	.....	125
Wolverine, c.	25	90,000	58.00	57.50	58 00	.....	.....	.....	58.00	57.00	.....	.....	59.00	.....	86
Wyandot	25	100,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Total sales, 96,722 shares.

PHILADELPHIA, PA.§

Name and Location of Company.	par val	Oct. 9. H.	Oct. 9. L.	Oct. 10. H.	Oct. 10. L.	Oct. 11. H.	Oct. 11. L.	Oct. 13. H.	Oct. 13. L.	Oct. 14. H.	Oct. 14. L.	Oct. 15. H.	Oct. 15. L.	Sales
Am. Alkali, Mich.	$50	...	...	...	...	...	...	...	...	...	...	...	...	...
Am. Cement	10	7.50	.....	.....	.....	7.50	.....	7.50	.....	763	.....	775	763	1,685
Cambria Iron, Pa.	50	48 75	.....	48 75	.....	.....	.....	48.00	.....	48 25	.....	.....	.....	320
Cambria Steel, Pa.	50	28 13	28.00	28.25	28.00	28.00	27.75	27.50	27.00	27.75	27 50	28 13	27.75	7,154
Penn. Steel, pfd.	100	.....	.....	101¾	101¼	.....	.....	.....	.....	101	100	101	.....	421
Susq. I. & S., Pa.	5	.....	.....	.....	.....	.....	.....	2 75	.....	.....	.....	.....	.....	104
United Gas I., Pa.	50	112¾	112⅛	112¾	112¼	112¾	112¼	112	111½	113	112	112⅝	112⅜	3,572
Warwick I. & Steel.	10	675	650	663	650	6 50	.....	6 50	.....	6 50	.....	6.50	.....	.....

§Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia, Pa. Total sales 13,256 shares.

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.*

Name of Company.	par val	Oct. 6. H.	Oct. 6. L.	Oct. 7. H.	Oct. 7. L.	Oct. 8. H.	Oct. 8. L.	Oct. 9. H.	Oct. 9. L.	Oct. 10. H.	Oct. 10. L.	Oct. 11. H.	Oct. 11. L.	Sales
Acacia	$1	.08⅜	.68½	.08½	.08	.08	.07⅝	.08	.07¾	.08	.07⅝	67¾	.....	3,000
Alamo	1	.04	.03¾	.04⅝	.03¾	.04	.03¾	.04	.03¾	.04	.03¾	.04	.03¾	3,000
Am. Con.	1	.03	.02½	.03	.....	.02⅝	.....	.03	.02	.03	.02	.03	.02¼	.....
Anaconda	1	.18½	.....	.17½	.....	.19¼	.18	.20	.18	.20	.17	.20	.17	.....
Be Hur	1	.03¾	.....	.03¾	.....	.....	.....	.03¾	.02¾	.03¾	.02¾	.03	.02¾	4,000
Black Bell	1	.08¾	.07	.07½	.....	.07½	.....	.07½	.....	.07½	.....	.07½	.....	.....
Blue Bell	1	.07½	.07	.06½	.....	.06½	.....	.07¼	.07	.09	.06	.06½	.....	1,000
C. . & N.	1	.09¾	.....	.09¼	.08½	.09½	.09¼	.09½	.09¼	.09⅝	.09¼	.09½	.09¼	7,000
C. . Con.	1	.07¼	.....	.07¼	.07½	.07¾	.07¼	.07⅝	.07¼	.07½	.07⅛	.07⅛	.07¼	17,000
Dante	1	.03⅞	.03	.03¼	.03	.03¼	.03	.01¼	.03	.03¼	.03	.03¼	.03	4,500
Dunlack Pot	1	.12⅜	.12⅛	.12⅜	.12⅛	.12⅜	.12¼	.13	.12⅜	.13	.12⅜	.13	.12⅜	7,500
Elkton Con	1	.32¼	.32	.33	.32	.33½	.32¼	.33½	.32½	.34	.33	.36	.34	8,000
El Paso	1	.73	.....	.72	.71	.70⅝	.70⅝	.72	.71	.72¾	.71	.72	.71⅛	12,500
Fanny Rawlings	1	.05½	.....	.05½	.04⅜	.05½	.04¼	.05½	.04	.05½	.04	.05½	.04¾	1,000
Findley	1	.10	.07	.10	.07	.10	.07	.10	.08	.10	.08	.10	.08	3,000
Gold Bond	1	.04⅜	.04¼	.04½	.04	.04⅜	.04	.04½	.04⅛	.04⅛	.04⅛	.04⅛	.03¾	6,000
Gold Dollar Con	1	.04¼	.04⅛	.04¼	.04⅛	.04⅝	.04	.04¼	.04⅛	.04¼	.04⅛	.04¼	.04⅛	20,000
Golden Cycle	1	.61⅞	.59⅝	.62	.59	.63	.59	.64	.59	.63	.59½	.63	.60	.....
Golden Fleece	1	.18	.12	.18	.12	.18	.12	.18	.12	.15	.....	.15	.....	.....
Gold Sov'n	1	.03½	.....	.03⅝	.03	.03⅝	.03½	.04¼	.03½	.03⅜	.03½	.04¼	.03⅝	.....
Hart	1	.04½	.04	.04¼	.04	.04	.03¾	.04½	.....	.....	.....	.04¼	.04	.....
Iron Clad	1	.....	.....	.02½	.02	.02½	.02	.....	.02	.....	.....	.....	.....	.....
Isabella	1	.34	.....	.35	.33	.33½	.33	.33⅝	.34½	.34¼	.33	.35	.34¼	13,100
Jack Pot	1	.12½	.12	.12⅝	.12	.12¼	.12	.12½	.12⅜	.12½	.12	.12½	.12	2,000
Last Dollar	1	.....	.....	.55	.....	.55	.....	.55	.....	.....	.....	.....	.....	.....
Lexington	1	.06	.....	.05	.04¾	.04⅜	.04½	.....	.04¾	.05¼	.04¼	.05¼	.05	12,100
Little Puck	1	.04	.....	.05	.04	.05	.....	.04¼	.....	.05	.04¼	.04¾	.04¼	.....
Mol. Gibson	1	.....	.04½	.05	.04	.05	.04	.05⅜	.04⅜	.05⅛	.04	.05½	.04¼	5,000
Moon Anchor	1	.09	.07	.09	.07¼	.09	.08¾	.09	.07¾	.09	.07½	.09	.07⅜	.....
Morning Star	1	.04⅜	.04¼	.04⅜	.04¼	.04⅜	.04¼	.04⅜	.04⅛	.04¼	.04⅜	.04¼	.04⅜	16,000
National	1	.02	.01¾	.02	.....	.01¾	.01⅝	.02	.01	.02	.01	.02	.....	2,000
Nellie V.	1	.02	.01½	.02	.01½	.02	.....	.01¾	.01¾	.02	.01⅝	.02	.01⅜	6,000
New Haven	1	.03	.....	.03¼	.02⅞	.03¼	.02⅝	.04	.02¾	.03⅜	.02⅞	.03¼	.02⅝	3,000
Pappoose	1	.01¼	.....	.....	.....	.....	.....	.02	.01⅜	.02	.01⅜	.01½	.02	.....
Pharmacist	1	.05¼	.04⅞	.06	.05¾	.05¾	.05⅝	.05¼	.05⅜	.06¾	.06¼	.06	.05¾	21,400
Pinnacle	1	.06⅝	.....	.07	.05⅞	.07	.....	.07	.06	.07	.05⅞	.07	.06⅜	.....
Pointer	1	.02¾	.02	.02½	.02	.02¼	.02	.02½	.02	.02½	.02	.02¼	.02½	1,400
Portland	1	1.90	.....	1 85	1 82	1.91	1.85	1 95	1.86	1 90	1.85	1.98	1.85	2,100
Prince Albert	1	.03	.....	.03	.....	.03	.02¾	.03¼	.02½	.02¾	.03¼	.03¼	.02¾	3,000
Republic	1	.03⅛	.02⅞	.03	.02¾	.02¾	.02½	.03	.02¼	.03	.02½	.....	.02⅜	1,000
Rose Maud	1	.03¼	.03	.03¼	.03	.03⅛	.03	.03¼	.03	.03⅛	.03	.03⅜	.03	500
Sunset Eclipse	1	.03	.....	.03⅜	.03	.03⅜	.02⅞	.03¼	.03	.03⅜	.02¾	.....	.01	6,000
Uncle Sam	1	.02½	.01½	.02	.01⅜	.02	.01⅜	.02¼	.02	.02	.....	.02	.01	.....
Vindicator Con	1	1.03¼	.....	1 05	1 02	1.15	1.00	1.07	1.00	1.10	1 02	1.10	1.05	1,800
Work	1	.07⅛	...	.08¼	.07¾	.07⅛	.07¾	.07¾	.07¾	.07⅞	.07⅝	.07¾	.07	10,000

*Colo. Springs Mining Stock Exchange. All mines are in Colorado. Total sales 249,300 shares.

Colorado Springs (*By Telegraph.*)

Name of Company.	par val	Oct. 2. H.	Oct. 2. L.	Oct. 3. H.	Oct. 3. L.	Oct. 4. H.	Oct. 4. L.	Oct. 6. H.	Oct. 6. L.	Oct. 7. H.	Oct. 7. L.	Oct. 8. H.	Oct. 8. L.
Acacia	$1	.08	.07¾	.08	.07⅝	.08¼	.08¾	.09	.07⅝	.08¼	.08	.08¼	.08
Alamo	1	.04	.03¾	.04	.03¾	.04	.03¾	.04	.03¾	.04⅛	.03¾	.04⅛	.03¾
Anaconda	1	.20	.18	.20	.17	03	.02¾	.20	17	.20	.17	.20	.18
Cripple Creek Con	1	.07⅜	.07¼	.07½	.07⅜	.07⅝	.07⅜	.07¼	.07¼	.07½	.07¼	.06⅞	.07½
Doctor Jack Pot	1	.13	.12½	.13	.12½	.13	.12½	13	.12¾	.13	.12¾	13	.12¾
Elkton, Con	1	.33⅛	.32½	.34	.33	.36	.34	.36½	.35	.36	.35¾	.36¼	.35¼
El Paso	1	.72	.71	.72¾	.71	.72	.71½	.73¼	.73	.73½	.73¼	.73½	.73⅜
Fanny Rawlings	1	.05¼	.04	.05⅜	.04	.05½	.04½	.05⅜	.04⅛	.05⅛	.04⅝	.05¼	.04½
Gold Dollar Con	1	.04¼	.04⅛	.04¼	.04⅛	.04⅜	.04⅜	.04⅜	.04¼	.04⅜	.04⅛	.04⅜	.04¼
Golden Fleece	1	.18	.12	.15	15	.15	.10	20	.12	.20	.15	.20	.15
Isabella	1	.33⅝	.33¼	.34½	34	.35	.34½	.36	.34⅝	.36	.34½	.35	.34
Jack Pot	1	.12¼	.12⅛	.12¼	.12	.12⅛	12	.12⅛	.12	.12¾	.12⅜	.13	.12¼
Last Dollar	1	.55	.40	.55	.40	.55	.40	.55	.40	.55	.40	.75	.40
Mollie Gibson	1	.05½	.04⅝	.05⅛	.04	.05½	.04¼	.05⅛	.04¼	.05⅜	.04⅝	.05⅜	.04½
Moon Anchor	1	.09	.07⅛	.09	.07¾	.09	.07⅛	.09	.07⅝	.09	.07½	.08	.07⅝
Pharmacist	1	.05¼	.05⅛	.06⅜	.06⅛	.06	.05¾	.05¾	.05⅝	.06	.05⅞	.06	.05⅞
Portland	1	1 95	1.84	1.90	1.85	1.88	1 85	2 00	1.80	1.95	1.85	1.95	1.80
Work	1	.07⅜	.07¼	.07¼	.07⅜	07¾	.07	.07¼	.07¾	.07¾	.07⅛	.07⅝	.07¼

MEXICO. Oct. 4.

Name of Company	Shares.	Last div'd	Prices. Bid.	Prices. Ask.
Durango:				
Ca. Min. de Penoles	2,500	$50.00	$4,300	$4,500
Guananjuato:				
Angustias, Pozos	2,400	5.00	70	73
Cinco Senores y An., aviadoras	2,000	15.00	278	282
Cinco Senores y An., aviada	400	10.00	262	268
Providencia, San Juan de la Luz	6,000	2.00	212	215
Guerrero:				
Garduno y Anexas	7,200	.....	30	50
Hidalgo:				
Amistad y Concordia	9,600	4.32	67½	68
Carmen, aviada	1,100	.....	150	200
Ca. Real del Monte	2,554	.....	450	550
El Encino, aviador	1,120	.....	.....	40
Guadalupe Fresnillo y Annexas	1,000	.....	220	300
La Blanca, aviadora	1,536	.....	740	760
La Blanca, aviada	768	.....	560	570
Maravillas y An., aviador	1,680	.....	180	200
Maravillas el Lobo	1,000	.....	150	240
Palma y An., aviador	1,800	.....	9	12
Sta. Gertrudis y An., aviadas	9,000	.....	7½	8½
Sta. Gertrudis y An., aviadora	28,800	1.00	76	76½
Santo Tomas Apostol aviador	5,100	.....	3	4
San Rafael y An., Trompillo	1,200	12.00	900	910
San Rafael y An., aviada	1,200	4.00	380	400
Soledad, aviada	960	10.00	320	325
Compressa, aviada	960	5 00	300	320

Name of Company.	Shares.	Last div'd	Price. Bid.	Price. Ask.
Mexico:				
Alacran	2,400	.....	$30	$40
La Esperanza (El Oro)	3,000	$10.00	740	750
Michoacan:				
Luz de Borda, aviadora	3,000	.....	35	45
Luz de Borda, aviada	1,000	.....	20	25
San Luis Potosi:				
Concepcion y An.	3,000	.....	80	90
El Barreno, aviador	2,000	2.00	59	62
Sta. Maria de la Paz	2,400	10.00	.....	500
San Diego y Annexas	2,400	4.00	47	50
Zacatecas:				
Candelaria y Pinos	2,500	.....	150	160
San Carlos y Annexas	2,500	10.00	210	220
Sta. Maria de Gaud.	2,500	10.00	150	155
Miscellaneous:				
Bartolome de Medina	2,000	1.50	70	75
Guadalupe Hacienda	10,000	2.00	240	245
La Luz Hac. (Pachuca)	3,750	.....	107	108
La Reina (Chihuahua)	192	.....	2,500	3,500
Naica (Chihuahua)	100	.....	6,000	.....
Natividad (Oaxaca) aviador	1,800	4.00	460	500
National (Oaxaca) aviador	1,800	4.00	.....	.....
San Francisco Hac.	6,000	1.00	78	80
Santa Ana Huantla Morelos	4,000	.....	50	70
Union Hacienda	3,000	5.00	275	285

ST. LOUIS, MO.* Oct. 11.

Name.	Shares.	Par Val.	Bid.	Ask.
Ajax-Nettie, Colo.	300,000	$10	$0.70	$0.75
Catherine Lead, Mo.	50,000	10	1.50	3.50
Central Coal & C.	18,750	100	67.00	69.00
Central C. & C., pf.	18,750	100	.....	.....
Central Lead, Mo.	10,000	100	130 00	135.00
Columbia Lead, Mo.	50,000	10	12.00	13 00
Con. Coal, Ill.	50,000	100	21.00	22.50
Doe Run Lead Co.	10,000	100	130.00	139.00
Granite Bimet, Mt.	1,000,000	10	1.30	1.90
St. Joe Lead, Mo.	300,000	10	20.00	22.00

*From our Special Correspondent.

TORONTO, ONT. Oct. 14

Name of Company.	par val	High.	Low.	Sales.
Center Star	$1	.41	.28½	.....
Fairview	1	.08¾	07	.....
Lone Pine	1	06	.04	.....
Mt. Lion	1	.18	.14	.....
North Star	1	.21	.18	.....
Payne	1	.17	.14	.....
Rambler-Cariboo	1	.76	.50	.....
Republic	1	.09	.06½	.....
War Eagle Con	1	.20½	.18	3,000
White Bear	1	03¾	.02½	8,000
Winnipeg Develop. Co	1	.04	.....	.....
Can. G. F. S.	1	.04½	03	.....

Total sales, 11,000 shares. † Ex-Dividend.

LONDON. Oct. 4.

Name and Country of Company	Authorized Capital.	Par value.	Last dividend. Amt.	Last dividend. Date	Quotations. Buyers.	Quotations. Sellers.
	£	£. s. d.	s. d.		£. s. d.	£. s. d.
Anaconda, c. s., Montana	6,000,000	5 0 0	2 0	May, 1902	5 3 9	5 6 3
Arizona, c., Ord	63,444	1 0 0	4 0	July, 1901	7 10 0	8 0 0
Arizona, pref., ord	316,530	1 0 0	4 0	July, 1902	7 15 0	8 0 0
Arizona, Cum., pfd	316,530	1 0 0	0 0	May, 1902	3 0 0	36 0 9
Copiapo, c., Chile	225,000	2 0 0	2 6	Dec., 1901	2 1 3	2 3 0
De Lamar, g. s., Idaho	80,000	1 0 0	2 0	July, 1902	17 6	1 0 0
Enterprise, g., British Col	200,000	1 0 0			2 6	7 6
El Oro, g Mexico	1,000,000	1 0 0	1 6	June, 1902	1 7 6	1 10 0
Frontino & Bolivia, g., Colombia	140,000	1 0 0	3 0	July, 1901	17 6	1 0 0
Hall Mg. & Sm., c. s., British Col	325,000	1 0 0	1 0	May, 1898	1 0	1 6
Le Roi, g., British Col	1,000,000	5 0 0	5 0	Nov., 1899	2 5 0	2 7 6
Le Roi No. 2, g., British Col	120,000	5 0 0	5 0	May, 1902	2 5 0	2 7 6
Montana, g. s., Montana	660,000	1 0 0	6	April, 1899	3 0	3 6
Stratton's Independence, Colorado	1,100,000	1 0 0	6	April, 1902	5 6	6 0
St. John del Rev., g., Brazil	600,000	1 0 0	6	June, 1902	16 6	17 6
Utah Con., g., (High. Boy), Utah	300,000	1 0 0	5 0	Dec., 1901	4 5 0	4 10 0
Ymir, g., British Col	200,000	1 0 0	1 0	Mar., 1902	8 9	11 3
European:						
Linares, l., Spain	45,000	3 0 0	1 2	Oct., 1902	2 0 0	3 0 0
Mason & Barry, c., sul., Port'g'l	185,172	1 0 0	13 6	May, 1902	3 7 6	3 12 6
Rio Tinto, c., Spain	1,625,000	5 0 0	37 6	May, 1902	43 7 6	44 12 6
Rio Tinto, pref., Spain	1,625,000	5 0 0	2 6	May, 1902	6 0 0	6 5 0
Tharsis, c., Spain	1,250,000	2 0 0	8 0	May, 1902	5 2 6	5 7 6
Australia and New Zealand:						
Assoc. Gold Mines, W Australia	500,000	1 0 0	1 6	Jan., 1900	1 11 3	1 13 9
Broken Hill Pr'p., s., N. S. Wales	384,000	8 0	1 0	Aug., 1902	1 19 6	1 10 6
Great Bo'd'r Pr'p., W. Australia	175,000	2 0		Oct., 1902	15 0	19 6
Hannan's Brownhill, g., W. Australia	155,000	1 0 0	5 0	Aug., 1901	2 6 3	2 8 9
Ivanhoe Gold Corp. W. Australia	1,000,000	5 0 0	3 0	July, 1902	7 6 3	7 8 9
Kalgurlie, g., W. Australia	120,000	1 0 0	2 6	Oct., 1902	3 12 6	3 15 0
Lake View Cons., g., W. Australia	250,000	1 0 0	5 0	Nov., 1901	2 10 0	2 12 6
Mt. Lyell M. & R. I., c., Tasmania	825,000	3 0 0	1 0	Oct., 1902	2 10 0	2 12 6
Mt. Morgan, g., Queensland	1,000,000	1 0 0	3	Sept. 1902	3 10 0	3 12 6
Waihi, g., New Zealand	497,412	1 0 0	2 6	June, 1902	5 2 6	5 5 0
Indian:						
Champion Reef, g., Colar Fields	236,500	10 0	2 0	Sept., 1902	6 3 9	6 6 3
Mysore Gold, Colar Fields	265,000	10 0	4 0	July, 1902	6 18 9	7 1 3
Nundydroog, g., Colar Fields	242,000	10 0	1 3	July, 1902	1 18 9	2 1 3
Ooregum, g., Colar Fields	171,500	10 0	9	Aug., 1902	2 1 3	2 3 9
Ooregum, pref., g., Colar Fields	120,000	10 0	9	Aug., 1902	2 13 9	2 16 3
African:						
British S. Africa, chartered S. Africa	5,000,000	1 0 0	rts.	May, 1899	3 3 9	3 5 0
Cape Copper, S. Africa	600,000	2 0 0	8 0	Jan., 1902	3 10 0	3 15 0
Cape Copper, pref., S. Africa	150,000	2 0 0	8 0	Jan., 1902	3 7 0	3 12 0
City and Sub'n (New), g., Transvaal	1,360,000	4 0 0	3 0	Aug., 1899	6 10 0	6 15 9
Crown Reef, g., Transvaal	120,000	1 0 0	10 0	Oct., 1902	17 10 0	18 0 6
De Beers Con., d., pref., Cape Colony	1,975,400	2 10 0	15 0	Mar., 1902	19 7 6	19 10 0
De Beers Con., def.	2,100,000	2 10 0	12 6	Sept., 1902	21 10 0	21 12 6
Ferreira g., Transvaal	90,000	1 0 0	10 0	Jan., 1902	23 5 0	23 15 0
Geldenhuis Est., g. Transvaal	200,000	1 0 0	5 0	Aug., 1902	6 13 9	6 16 3
Henry Nourse, g., Transvaal	125,000	1 0 0	10 0	June, 1899	9 0 0	9 5 0
Jagersfontein, d., Orange F. S.	1,000,000	5 0 0	6 0	Nov., 1899	24 15 0	26 5 0
Jubilee, g., Transvaal	50,000	1 0 0	5 0	July, 1899	5 10 0	6 0 0
Langlaagte Est., g., Transvaal	470,000	1 0 0	3 0	Sept., 1899	4 0 0	4 2 6
May Con., g., Transvaal	200,000	1 0 0	3 0	Feb., 1902	4 15 0	4 17 6
Meyer & Charlton, g., Transvaal	100,000	1 0 0	3 0	Aug., 1902	5 15 0	6 0 0
Namaqua, c., Cape Colony	200,000	2 0 0	2 0	June, 1902	3 5 0	3 10 0
Primrose (New), g., Transvaal	300,000	1 0 0	6 0	Aug., 1899	3 17 6	4 0 0
Rand Mines, g., S. Africa	448,889	5 0	4 0	Aug., 1902	11 8 9	11 12 0
Robinson, g., Transvaal	2,750,000	5 0 0	7 6	Aug., 1902	11 5 0	11 10 0

c.—Copper. d.—Diamonds. g.—Gold. l.—Lead. s.—Silver.

PARIS. Sept. 25.

Name of Company.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices. Opening	Prices. Closing.
			Francs.	Fr.	Fr.	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs.	27,000,000	2,000	85.00	1,715.00	1,730.00
" " Firminy	"	" "	3,000,000	500	200.00	2,575.00	2,550.00
" " Huta-Bank	Russia	Iron and Steel		500	.....	3,615 00	3,575.00
" " la Marine	France	Steel mfrs.	20,000,000	500	65.00	1,225.00	1,206.00
Anzin	"	Coal		.....	320.00	5,510.00	5,350.00
Boleo	Lower Cal.	Copper		500	176.00	1,151.00	1,151.00
Briansk	Russia	Coal and Iron		500	.....	325.00	278.00
Champ d'Or	S. Africa	Gold	3,375,000	25	3.75	25.75	27.00
Courrieres	France	Coal	600,000	300	90.00	2,685.00	2,600.00
Dombrowa	Russia	"		500	75.00	976.00	976.00
Dynamite Centrale	France	Explosives		500	19.00	505.00	490.00
Escombrera-Bleyberg	Spain	Lead		500	50.00	766.00	750.50
Fraser River	Brit. Col'mb.	Gold	250,000	25	.....	6.00	6.00
Huanchaca	Bolivia	Silver	40,000,000	125	5.00	106.50	102.00
Laurium	Greece	Zinc and Lead	16,300,000	500	25.00	337.00	336.50
Malfidano	Italy	Zinc	12,500,000	500	12.50	450.00	472.00
Metaux, Cie. Fran. de	France	Metal dealers	25,000,000	500	22.50	484.00	485.00
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	35.00	856.00	852.00
Naphthe Baku	Russia	Petroleum				379.50	379.50
Naphthe Nobel	"	"				475.00	475.00
" " parts	"	"				9,475.00	9,475.00
Nickel	N. Caled'nia	Nickel	10,000,000	250	20.00	450.00	448.50
Penarroya	Spain	Coal, etc		500	55.00	982.00	980.00
Rebecca	Colo'do, U. S.	Gold	5,000,000	25	.....	1.25	1.25
Salines de l'Est	France	Salt		500	6.00	275.00	275.00
Salines du Midi	"	"		500	40.00	890.00	890.00
Vielle Montagne	Belgium	Zinc	9,000,000	30	30.00	614.00	618.00

SALT LAKE CITY.* Oct. 11.

Name of Company	Shares.	Par Val	High.	Low.	Sales.
Ajax	300,000	$10	$.38	$.33	9,000
Ben Butler	500,000	1	.13	.12¾	1,200
Bullion-Beck	100,000	10	.....	.....	.....
California	300,000	1	.42½	.33	67,355
Carisa	500,000	1	.20½	.18½	12,150
Century	150,000	1	1.11¼	1 00	3,900
Con. Mercur	1,000,000	5	1.59½	1 92½	12,350
Daly	150,000	20	2 61½	1.80	5,588
*Daly-Judge	.....	.....	10.12½	9.75	1,895
Daly-West	150,000	20	50.20	49.70	205
Eagle & B. Bell	250,000	1	.....	.....	.....
Grand Central	250,000	1	5.40	5 15	2,200
L. Mammoth	150,000	1	1.46	1.31	6,300
Mammoth	400,000	25	.....	.....	.....
May Day	400,000	.25	.34	.23	116500
Ontario	150,000	100	.....	.....	.....
Sacramento	1,000,000	5	28	28½	5,800
Star Con	500,000	1	.13	.12½	300
So. Swansea	300,000	1	.19½	.18½	1,200
Swansea	100,000	5	.....	.....	.....
Uncle Sam	500,000	1	.32	.30	4,951
Victor	500,000	1	.29	24½	21,400
West Mg. Glory	500,000	10	.01⅜	.01⅛	1,900
Yankee Con	500,000	1	67	.60½	4,000

All mines are in Utah. *By our Special Correspondent. Total sales, 262,154 shares.

SPOKANE, WASH.* Oct. 9

Name of Company.	Par Val.	H.	L.	Sales.
American Boy	$1	.06	.05⅝	15,000
Ben Hur	1	.....	.....	.....
Black Trail	1	.10	.09⅜	1,000
Cariboo, McK	1	.23	.22	.....
Center Star	1	.44	.41	.....
Gold Ledge	1	.61⅝	.61⅜	35,000
Hecla	1	1.25	1.12	.....
Humming Birds	1	.....	.....	.....
Giant	1	.04½	04	.....
Lone Pine	1	.04⅜	.....	.....
Lucille Dreyfus	1	.08	.06	4,000
Mt. Lion	1	.19	.18	.....
Morning Glory	1	.02⅛	.02⅜	10,000
Princess Maud	1	.01¼	.01	.....
Quilp	1	.32	.29	.....
Rambler Cariboo	1	.77	.76	.....
Republic	1	.08	.....	.....
San Poil	1	.25	.23¾	.....
Snowstorm	1	.14	.13½	.....
Sullivan	1	.06	.05¾	.....
Tom Thumb	1	.....	.....	.....
Trade Dollar	1	.....	.....	.....

Total sales 65,000 shares. *Reported by Hunner & Harris.

CHEMICALS, MINERALS, RARE EARTHS, ETC.—CURRENT WHOLESALE PRICES.

(See also Market Reviews.)

Abrasives—	Cust. Meas.	Price.
Carborundum, f.o.b. Niagara Falls, Powd., F. FF. FFF..	lb.	$0.08
Grains	"	.10
Corundum, N. C	"	.07@.10
Chester, Mass	"	.04½@.05
Barry's Bay, Ont		.07½@.09½
Crushed Steel, f. o. b. Pittsburg	"	.05½
Emery, Turkish flour, in kegs	"	.03½
Grains, in kegs	"	.05@.05½
Naxos flour, in kegs	"	.03½
Grains, in kegs	"	.05@.05½
Chester flour, in kegs	"	.03½
Grains, in kegs	"	.05@.05½
Peekskill, f.o.b. Easton, Pa., flour, in kegs	"	.01½
Grains, in kegs	"	.02½
Crude, ex-ship N. Y.: Abbott (Turkey)	lg. ton	26.50@30.00
Kuluk (Turkey)	"	22.00@24.00
Naxos (Greek) h. gr	"	26.00
Garnet, as per quality	sh. ton	25.00@35.00
Pumice Stone, Am. powd	lb.	.01½@.02
Italian, powdered	"	.01½
Lump, per quality	"	.04@.40
Rottenstone, ground	"	02½@.04½
Lump, per quality	"	.06@.20
Rouge, per quality	"	.10@.30
Steel Emery, f.o.b. Pittsburg	"	.07

Acids—		
Boracic, crystals	"	.10¾@.11
Powdered	"	.11¼@.11½
Carbonic, liquid gas		.12½
Chromic, crude		.20
Hydrofluoric, 30%	"	.06
48%	"	.05
60%	"	.11
Sulphurous, liquid anhy	"	.05

Alcohol—Grain	gal.	2.47
Refined wood, 95@97%	"	.60@.65
Purified	"	1.20@1.50

Alum—Lump	100 lbs.	1.75
Ground	"	1.80
Powdered	"	3.00
Chrome, com'l	"	2.75@3.00

Aluminum—		
Nitrate	lb.	1.50
Oxide, com'l, common	"	.06½
Best	"	.20
Pure	"	.80
Hydrated	100 lbs.	2.60
Sulphate, pure	"	1.50@2.00
Com'l	"	1.15@1.25

Ammonia—		
Aqua, 16°	lb.	.03
18°	"	.03¼
20°	"	.03¾
26°	"	.05½

Ammonium—		
Carbonate, lump	"	.08¾
Powdered		.09
Muriate, grain		.05¾
Lump	"	.08¼
Nitrate, white, pure (99%)		.12
Phosphate, com'l	"	.09
Pure	"	.12

Antimony—Glass	"	.30@.40
Needle, lump	"	.05½@.06
Powdered, ordinary	"	.05¾@.07¼
Oxide, com'l white, 95%	"	.09½
Com'l white, 99%	"	.12
Com'l gray	"	.07
Sulphuret com'l	"	.16

Arsenic—White	"	.02¾@.03½
Red	"	.06¾@.07

Asphaltum—		
Ventura, Cal	sh. ton	32.00
Cuban	lb.	.01½@.03½
Egyptian, crude	"	.05½@.06
Trinidad, refined	sh. ton	35.00
San Valentino (Italian)	lg. ton	16.00
Seyssel (French), mastic	sh. ton	21.00
Gilsonite, Utah, ordinary	lb.	.03
Select	"	.03¾

Barium—		
Carb. Lump, 80@90%	sh. ton	25.00@27.50
92@98%	"	26.00@29.00
Powdered, 80@90%	lb.	.01¾@.02
Chloride, com'l	100 lbs.	1.67½@1.76
Chem. pure cryst	lb.	05
Nitrate, powdered	"	.05½

Barium	Cust. Meas.	Price
Oxide, Am. hyd. cryst	lb.	$0.02¾
Sulphate (Blanc Fixe)	"	.02

Barytes—		
Am. Crude, No. 1	sh. ton	9.00
Crude, No. 2	"	8.00
Crude, No. 3	"	7.75
German, gray	"	14.50
Snow white	"	17.00

Bauxite—Ga. or Ala. mines:		
First grade	lg. ton	5.50
Second grade	"	4.75

Bismuth—Subnitrate	lb.	1.40
Subcarbonate	"	1.65

Bitumen—"B"	"	.03½
"A"	"	.05

Bone Ash	"	.02¼@.02½
Borax	"	.07¼@.07½
Bromine	"	.40
Cadmium—Metallic	"	1.40
Sulphate	100 lbs.	2.00@2.50

Calcium—Acetate, gray	"	1.30
brown	"	.90
Carbide, ton lots f.o.b. Niagara Falls, N. Y., for Jersey City, N. J	sh. ton	70.00
Carbonate, ppt	lb.	.05
Chloride	100 lbs.	.70@.90

Cement—		
Portland, Am., 400 lbs	bbl.	1.70@1.90
Foreign	"	1.65@2.25
"Rosendale," 300 lbs	"	.75
Slag cement, imported	"	1.65

Ceresine—		
Orange and Yellow	lb.	.12
White	"	.13½

Chalk—Lump, bulk	sh. ton	2.50
Ppt. per quality	lb.	.03¾@.06

Chlorine—Liquid	"	.30
Water	"	.10

Chrome Ore—		
(50% ch.) ex-ship N. Y	lg. ton	24.75
Bricks, f.o.b. Pittsburg	M	175.00

Clay, China—Am. com., ex-dock, N. Y	lg. ton	8.00
Am. best, ex-dock, N. Y	"	9.00
English, common	"	12.00
Best grade	"	17.00
Fire Clay, ordinary	sh. ton	4.25
Best	"	6.00
Slip Clay	"	5.00

Coal Tar Pitch	gal.	.08

Cobalt—Carbonate	lb.	1.75
Nitrate	"	1.50
Oxide—Black	"	2.20@2.30
Gray	"	2.28@2.40
Smalt, blue ordinary	"	.06
Best	"	.20

Copperas—in bulk	100 lbs.	.37½
in bbls	"	.42½

Copper—Carbonate	lb.	.18@.19
Chloride	"	.35
Nitrate, crystals	"	.35
Oxide, com'l	"	.19

Cryolite	"	.06½

Explosives—		
Blasting powder, A	25 lb. keg	.65
Blasting powder, B	"	1.40
"Rackarock," A	lb.	.25
"Rackarock," B	"	.18
Judson R.R. powder	"	.10
Dynamite (20% nitro-glycerine)	"	.13
(30% nitro-glycerine)	"	.14
(40% nitro-glycerine	"	.15
(50% nitro-glycerine)	"	.16½
(60% nitro-glycerine)	"	.18
(75% nitro-glycerine)	"	.21
Glycerine for nitro (32 2-10° Be.)		.13⅜@.13¾

Feldspar—Ground	sh. ton	8.00@9.00

Flint Pebbles—Danish, Best	lg. ton	14.75
French, Best	"	11.75

Fluorspar—		
Am. lump, 1st grade	sh. ton	$14.40
2d grade	"	13.90
Gravel and crushed, 1st gr	"	13.40
2d grade	"	12.40
Ground, 1st grade	"	17.90
2d grade	"	16.50
Foreign, lump	"	8.00@12.00
Ground	"	11.50@14.00

Fuller's Earth—Lump	100 lbs.	.75
Powdered	"	.80

Graphite—Am. f.o.b. Providence, R. I., lump	sh. ton	$8.00
Pulverized	"	30.00
German, com. pulv	lb.	.01¼@.01½
Best pulverized	"	.01¼@.02
Ceylon, common pulv	"	.02¾@.03½
Best pulverized	"	.04@.08
Italian, pulv	"	.01¼

Gypsum—Ground	sh. ton	8.00@8.50
Fertilizer	"	7.00
Rock	lg. ton	4.00
English and French	"	14.00@16.00

Infusorial Earth—Ground.		
American, best	"	20.00
French	"	37.50
German	"	40.00

Iodine—Crude	100 lbs	2.45

Iron—Muriate	lb.	.05
Nitrate, com'l	"	.01¼
True	"	.04
Oxide, pure copperas color	"	.05@.10
Purple-brown	"	.02
Venetian red	"	.01@.01½
Scale	"	.01@03

Kaolin—(See China Clay.)		
Kryolith—(See Cryolite.)		

Lead—Acetate, white	"	.07¾@.08
Brown	"	.06
Nitrate, com'l	"	.06½
gran	"	.08¼

Lime—Com., abt. 250 lbs	bbl.	.80
Finishing	"	.90

Magnesite—Greece.		
Crude (95%)	lg. ton	6.00@6.50
Calcined	sh. ton	17.50@18.00
Bricks	M	170.00
Am. Bricks, f.o.b. Pittsburg	"	175.00

Magnesium—		
Carbonate, light, fine pd	lb.	.05
Blocks	"	.07@.09
Chloride, com'l	"	.01¾
Fused	"	.20
Nitrate	"	.60
Sulphate	100 lbs.	.75@.95

Manganese—Powdered, 70@75% binoxide	lb.	.01¼@.01½
Crude, pow'd. 75@85% binoxide	"	.01½@.02¼
85@90% binoxide	"	.02¼@.03¼
90@95% binoxide	"	.03¼@.05½
Carbonate	"	.16@.20
Chloride	"	.04
Ore, 50% Foreign	unit	.18@.19
Domestic	"	.30

Marble—Flour	sh. ton	6.00@7.00

Mercury—Bichloride	lb.	.77

Mica—N. Y. gr'nd, coarse	sh. ton	33.00@38,00
Fine	lb.	.07¾@.02
Sheets, N. C., 2x4 in	"	.30
3x3 in	"	.80
3x4 in	"	1.50
4x4 in	"	2.00
6x6 in	"	3.00

Mineral Wool		
Slag, ordinary	sh. ton	19.00
Selected	"	25.00
Rock, ordinary	"	32.00
Selected	"	40.00

Nickel Oxide, No. 1	lb.	1.00
No. 2	"	.60
Sulphate	"	.20@.21

Oils—Black, reduced 29 gr.:		
25@30, cold test	gal.	.09¾@.10¼
15, cold test	"	.10¾@.11¼
Zero	"	.11¾@.12¾
Summer	"	.09¾@.09¾
Cylinder, dark steam ref	"	.08¾@.10¾
Dark, filtered	"	.11¼@.15¼
Light filtered	"	.14¾@.17¾
Extra cold test	"	.21¾@.26¾
Gasoline, 86°@90°	"	.15@.20
Naphtha, crude, 68°@72°	bbl.	9.05
"Stove"	gal.	.12
Linseed, domestic raw	"	.44@48
Boiled	"	.50
Calcutta, raw	"	.75

Ozokerite	lb.	.11½

Paints and Colors—		
Chrome green, common	"	.05
Pure	"	.16
Yellow, common	"	.10¼
Best	"	25
Lampblack, com'l	"	.04½
Refined	"	.07
Litharge, Am. powd	"	.04¾@.05½
English flake	"	.08¼@.08½
Glassmakers'	"	.07¼@.08

Paints and Colors—	Cust. Meas.	Price
Metallic, brown	sh. ton	$ 19.00
Red	"	16.00
Ocher, Am. common	"	9.25@10.00
Best	"	21.25@25.00
Dutch, washed	lb.	.04¼
French, washed	"	.01¼@.01½
Orange mineral, Am	"	.07¾@.08
Foreign, as to make	"	.08½@.11¼
Paris green, pure, bulk	"	.12
Red lead, American	"	.05¾@.06
Foreign	"	.06¾@.08
Turpentine, spirits	gal.	.54 @.54¼
White lead, Am., dry	lb.	.04½@.04¾
American, in oil	"	.05½@.05¾
Foreign, in oil	"	6¾@.00
Zinc, white, Am., ex dry	"	.04¾@.04¾
American, red seal	"	.06½
Green seal	"	.07
Foreign, red seal, dry	"	.05¾@.08½
Green seal, dry	"	.06½@.09½

Potash—		
Caustic, ordinary	"	.04¾@.05
Elect. (90%)	"	.06½

Potassium—		
Bicarbonate cryst	"	.08¼
Powdered or gran	"	.14
Bichromate, Am	"	.08½@.08¾
Scotch	"	.08¾@.09
Carbonate	"	.03¾@.03¾
Chromate	"	.35
Cyanide (98@99%)	"	.20
Kainit	lg. ton	9.05
Manure salt, 20%	100 lbs.	.66
Double Manure salt, 48@53%	"	1.12
Muriate, 80@85%	"	1.83
95%	"	1.86
Permanganate	lb.	.09¼@.10
Prussiate, yellow	"	.13¾@.14
Red	"	.36
Sulphate, 90%	100 lbs.	2.11
96%	"	2.14
Sylvinit	unit	.39½

Quartz—(See Silica).		
Salt—N. Y. com. fine	sh. ton	9.00
N. Y. agricultural	"	1.50

Saltpetre—Crude	100lbs.	3.35@3.37½
Refined	"	4.25@4.62½

Silica—Best foreign	lg. ton	10.00@11.00
Ground quartz, ord	sh. ton	6.00@8.00
Best	"	12.00@13.00
Lump quartz	"	2.50@4.00
Glass sand	"	2.75

Silver—Chloride	oz.	65
Nitrate	"	35
Oxide	"	.85@1.10

Sodium—		
Bichromate	lb.	.06¼
Chlorate, com'l	"	.07¼@.08
Hyposulphite, Am	100 lbs.	1.60@1.65
German	"	1.70@1.90
Peroxide	lb	.45
Phosphate	"	.02¾
Prussiate	"	.11@.11½
Silicate, conc	"	.05
Com'l	"	.01
Sulphate, com'l	100 lb.	75@.82½
Sulphide	lb.	.01¼
Sulphite crystals	"	.02½

Sulphur—Roll	100 lbs.	1.85
Flour	"	1.90
Flowers, sublimed	"	2.15

Talc—N. C., 1st grade	sh. ton	13.75
N. Y., Fibrous, best	"	10.25
French, best	100 lbs.	1.25
Italian, best	"	1.62½

Tar—Regular	bbl.	2.30
Oil barrels	"	2.40

Tin—Crystals	lb.	.25
Oxide	"	.45

Uranium—Oxide	"	2.25@3.00

Zinc—Metallic, ch. pure	"	.07@.09½
Carbonate, ppt	"	.06
Chloride solution, com'l	"	.02¼
granular	"	.04½@.04¾
Dust	"	.04½@.04¾
Sulphate	"	.02½@.02¾

THE RARE EARTHS.

	Cust. Meas.	Price
Boron—Nitrate	lb.	$1.50
Calcium—Tungstate (Scheelite)	"	.80
Cerium—Nitrate	"	10.00
Didymium—Nitrate	"	35.00
Erbium—Nitrate	"	40.00
Glucinum—Nitrate	"	20.00
Lanthanum—Nitrate	"	30.00
Lithium—Nitrate	oz.	.60
Strontium—Nitrate	lb.	06¾@07
Thorium—Nitrate 49@50%	"	4.50
Uranium—Nitrate	oz.	.25
Yttrium—Nitrate	lb.	40.00
Zirconium—Nitrate	"	8.00

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable.